THE MEANING OF THE RATIONES SEMINALES IN ST. AUGUSTINE

BY THE

REV. MICHAEL J. MCKLOUGH, O. PRAEM. M.A.

St. Norbert's College

West De Pere, Wis.

DISSERTATION

Submitted to the Faculty of Philosophy of the Catholic University of America in Partial Fulfillment of the Requirements for the Degree of Doctor of Philosophy

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INTRODUCTION

Evolution is generally accepted as a fact by the scientist of today. Descent with modification as a process of nature is taken for granted. There are indeed theories, intended to explain the evolutionary process, which are admitted as working hypotheses, but what they call the "fact" of Evolution must not be disputed. Bateson wrote in 1915 that "we have got to recognize that there has been an evolution, that somehow or other, the forms of life have arisen from fewer forms,"[1] and Dr. G. H. Parker, of Harvard University, puts it even more strongly: "It is this strength of the modern position that has placed every biologist on the side of evolution. In other words, practically all biologists today accept without any reservation, descent with modification as a process of nature. They no longer question this view. This statement cannot be emphasized too strongly."[2] Sir Bertram Windle notes that the same attitude is taken by the writers of textbooks. "In all the manuals," he says, "we find it (Evolution) set down as a dogma of scientific faith."[3] Occasionally an authoritative voice is heard in protest,[4] but it does little to disturb the calm security of the evolutionary protagonists.

But while they are unanimous in proclaiming descent with modification to be a fact, nevertheless they differ widely in explaining the causes and factors of that process. Parker says: "At the same time that these biologists accept descent with modification as an actual occurrence in nature, they are most skeptical and reserved about what may be

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[1] Bateson: *Heredity,* in Annual Report of Smithsonian Institute, 1915, p. 372.

[2] Parker: *What Evolution Is,* p. 62.

[3] Windle: *Evolution, A Recent French Criticism,* in *The Catholic World,* vol. CXXII, p. 66.

[4] Prof. M. Vialleton: *Membres et Ceintures des Vertebrés Tétrapodes. Critique Morphologique du Transformisme.* This is the severest condemnation of the ordinary proofs for Transformism that has appeared in recent times. Cfr. no. 3 supra.

called the driving force behind descent."[5] He enumerates three principal theories that have been put forth as explanations of evolution, v.g., Lamarckism, Darwinism and the Mutation Theory. He warns his readers against the error of condemning evolution itself because of the disagreement in its explanation. "Because biologists have not yet discovered how evolution takes place," he writes, "is no reason for denying evolution itself."[6] Bateson vehemently rejects Darwinism but stoutly maintains his belief in Evolution. It is evident that a distinction must be made between the fact of evolution as a process of nature and the explanations of that process.

Among Catholic scholars the number who accept Evolution as a fact is limited. There are some who accept it as a working hypothesis. However, the anti-Christian attitude of many of the earlier defenders of the theory who used it to bolster up their materialistic philosophies, caused many Christian thinkers to reject it in any form. In their anxiety to safeguard the cherished principles of the existence of God, the creation of all things and the essential distinction between man and the lower animals, they would have nothing to do with a doctrine that seemed to call these truths into question. Catholics in general reflected this attitude of their leaders, and to some extent the spirit of antagonism towards evolutionism remains dominant even today. There is, however, a growing tendency to look upon the question as a scientific problem rather than a theological one and to judge it upon the merits of the proofs alleged in its support.

On the other hand there have been leaders who saw the possibility of reconciling Evolutionism with the principles of faith. They rejected of course the materialistic and mechanistic theories and proposed in their stead what they called Theistic Evolution. As early as 1877, Knabenbauer, the celebrated Jesuit theologian, asserted: "There is no objection, as far as faith is concerned, to assuming the descent of all plants and animal species from a few types."[7]

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[5] Parker: l c. no. 2 supra.
[6] Parker: Op. cit., p. 63.
[7] Knabenbauer: *Glaube und Deszendenztheorie*, in *Stimmen aus Maria Laach*, XIII, p. 75.

Other eminent scholars, like Mivart, Zahm, Wasmann, openly championed the cause of theistic evolutionism. These men argued that, neither from the scientific nor from the philosophic point of view, was there any contradiction between this theory, so understood, and Catholic faith. The Scriptural account does not determine the form in which created things came into existence, nor the number of the original forms. Moreover, by the principle of St. Thomas that "the potency of a cause is the greater, the more remote the effects to which it extends,"[8] they contended that it would be a greater manifestation of God's wisdom and power, if the world were created by a single act of His divine will and developed to its present form by powers and laws implanted in it at the beginning by the Creator.[9]

To give their views greater authority, these Catholic defenders of evolutionism turned to the Fathers and the Schoolmen for principles or opinions that would confirm their own positions. They realized that any doctrine must stand or fall by its conformity or lack of conformity with the fundamental principles laid down by St. Augustine and St. Thomas Aquinas. A well developed cosmological system had been bequeathed to us by these holy doctors. It was the norm by which the new evolutionism must be measured. The first important attempt along this line was made by St. George Mivart, in his book, *"The Genesis of Species,"* published in 1871. In an effort to show that Christian thinkers were perfectly free to accept the general evolution theory, he quotes freely from St. Augustine and St. Thomas and refers to Suarez, Cornelius a Lapide and other Catholic writers. His arguments were ably defended and amplified in this country by Doctor J. A. Zahm, C.S.C., in his two books, *"Bible, Science and Faith,"* and *"Evolution and Dogma,"* both published in the nineties. To the quotations from Augustine, and Thomas, Zahm added others from the Greek Fathers, Basil and Gregory of Nyssa. Their example was followed by many other scholars, non-Catholic as well as Catholic.[10]

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[8] *Sum. C. Gentes,* III, c. LXXVII.
[9] Cfr. art. *Evolution,* Cath. Ency., vol. V.
[10] Osborn: *From the Greeks to Darwin,* p. 69 seq., also Husslein: *Evolution and Social Progress,* p. 95.

Of those scholars of the past, whose authority was most frequently invoked, St. Augustine was given the first place. This was due to the fact that the Bishop of Hippo was commonly acknowledged to be the greatest of the Fathers and his opinions consequently would have the most weight. Secondly, Augustine had gone into the question of the origin and development of things far more thoroughly and extensively than any other writer. In the *de Genesi ad Litteram* and to a lesser extent in his other works, he has given us a penetrating and exhaustive study of the meaning of Genesis and its interpretation according to the scientific knowledge of his time. Thirdly, Augustine's thought seemed to fit in with modern evolutionary doctrine better than that of the others. For these reasons he became the great master of the Christian defenders of evolutionism. But his support was not to be retained without a struggle. The interpretations of Mivart and especially those of Zahm were challenged and a controversy over the cosmological theories of the great Father was started that has not yet been settled. A series of articles appeared in the Irish Ecclesiastical Record of 1899,[11] in which the question of St. Augustine and Evolution was argued pro and con by Father Patrick F. Coakley, O.S.A., and Father Philip Burton, C.M. The latter denies the correctness of Doctor Zahm's interpretations and seeks to show that Augustine's theories are directly opposed to evolutionism in the modern sense. Father Coakley undertakes to defend the aforesaid interpretation and quotes many Augustinian authorities in its defense. Since that time numerous other articles and references concerning this problem have appeared; none of them, however, authoritative or thorough enough to be regarded as decisive.

The appearance in 1922 of Canon Dorlodot's *"Darwinism and Catholic Thought"* gave new impetus to the controversy. The Canon takes a very decided stand on the side of evolution and invokes the authority of the Fathers, especially Augustine, to support absolute natural evolution. His high position and the scholarly character of his work immediately attracted the attention of Catholic scholars

[11] Irish Ecc. Rec., 4-S, vol. V, Jan.-Jun., 1899.

everywhere and many criticisms, some approving, others condemning, appeared in current periodicals.[12] In 1924 Father Henry Woods, S.J., of the University of Santa Clara, California, published his work, entitled *"Augustine and Evolution."* While the author does not say so, it is quite evidently intended to counteract the influence of Dorlodot's book. Father Woods argues that there is nothing in Augustine's doctrine that in any way favors evolutionism. In fact he seeks to prove that Augustine's theories are directly opposed to any evolutionary scheme. His treatment represents serious thought and has been favorably reviewed by a number of scholarly critics. Nothing of importance has been added to the dispute since the publication of this study. The several magazine articles that have appeared have but reviewed the arguments already put forth.

A study of these various efforts to settle the controversy reveals that the pivotal point around which the whole question turns, is the meaning of the *Rationes Seminales.* Augustine clearly says that God did not create living beings as they are but potentially, in their *rationes seminales,* which in the course of time became actual. From Mivart to Woods, the question has been: What did Augustine mean by these *rationes seminales?* What was the manner of their existence and how did they become actual? Those who have sought to enlist his support for evolutionism have contended that these were active powers, capable of developing into real beings by the operation of natural laws, without the special intervention of the Creator. Their opponents, Burton, Woods, *et al.,* assert that these potentialities were passive only, capable of receiving forms, but requiring the direct action of God to bring the form into existence. Here lies the crux of the problem. Were the *rationes seminales* active powers, able to produce effects of themselves, supported only by the divine concursus; or, were they passive only, incapable of effecting anything, without the direct action of God? All hinges about this question.

In view of the scholarly studies that have already appeared it might seem that the field had been thoroughly

[12] See especially the articles by Fathers Hornsby and Livingstone, S.J., in the *American Ecclesiastical Review.*

gone over and that nothing new, of importance, could be added to it. However, a careful review of the available matter has convinced the writer otherwise. The only extended study that has this particular problem for its purpose is that of Father Woods; the others either treat of the general attitude of the Church towards evolutionism, and only mention Augustine to support their thesis, as, for instance, the works of Mivart, Zahm, Wasmann, Dorlodot, *etc.*, or they are general studies of the philosophy or theology of St. Augustine, that touch only incidentally this particular problem. Such studies are necessarily brief and inadequate. Dorlodot's work is scholarly but his enthusiasm for evolutionism leads him to conclusions which must be questioned. Father Woods goes to the other extreme and presents an interpretation with which the writer cannot agree. A middle way between these two extremes has been suggested by certain French writers but none of them has developed the subject in a satisfactory manner.[13] For these reasons the writer with the sanction of the Department of Philosophy of the Catholic University undertook to make a more thorough study of Augustine's cosmological system than has hitherto been attempted and to present a clear explanation of the disputed *rationes seminales* in modern terminology.

As has been stated before, the crux of the whole question lies in the meaning of these *rationes seminales*. This, then, is the precise and definite purpose of this study, to determine the meaning of the terms, as conceived by Augustine and by doing so to arrive at a knowledge of his theories regarding the origin and development of living things. Thamiry points out that the bishop uses this idea of the *rationes seminales* to explain intellectual and moral development also, but this use does not interest us here. We are concerned only with its application to the problems of Cosmology. Naturally, the solution of these problems has a direct bearing on the question of Augustine and Evolution. The present study, however, is not in any way an investigation of the theory of evolution. It holds no brief for or against that doctrine. In the final chapter an effort

[13] Cfr. the works of Thamiry and Boyer in the gen. bibliography.

is made to decide how far Augustine can justly be invoked to support the general theory of descent with modification, but it is not intended thereby to prove or disprove the theory itself. Neither does the writer intend to explain the use of the theory of the *rationes seminales* by any other authors, before or after the time of Augustine. Whenever references are made to them it is solely for the purpose of shedding light on the main issue. The general plan followed has been to present the various phases of the problem in their logical order and then to find for each a solution in the original text of Augustine himself. Reference is then made to other authors, particularly St. Thomas, for a confirmation of the interpretation offered. Opposing opinions, especially those of modern authors, are next studied and if possible answered. St. Thomas is of course the great interpreter of St. Augustine, and consequently, wherever possible, his interpretation of any given statement from Augustine is given precedence over all others. The attitude of St. Thomas towards the theory of the *rationes seminales* has itself been a source of dispute among commentators. It is not proposed to settle that question here. Special attention has been given to the opinions of Dorlodot and Woods, since they are the most recent statements on the subject. Throughout the discussion the argument from authority is made secondary to the argument based on Augustine's own statements.

To accomplish the purposes of this study the work has been divided into five chapters. The first is general. Its purpose is to show the influences that contributed to the formation of Augustine's thought, the general outlines of his philosophy and the particular interest which he had in the problem of Genesis. A few helpful suggestions in finding and understanding the prolific doctor's cosmological theories are likewise given. Since Augustine was not the first to use the theory of the *rationes seminales* but merely adapted it to his needs after it had undergone a long period of development, the second chapted is devoted to a study of this development. The question of the nature of *rationes seminales* is separated from that concerning their origin and development. In the third chapter, the first part of the

problem is studied. It involves an investigation into Augustine's use of the terms *rationes seminales,* of their physical nature, the important question as to their powers, whether active or passive, and the manner in which future beings are contained in them. The fourth chapter deals with the origin of the *rationes seminales,* St. Augustine's concept of creation and the manner in which things came into existence, his teaching regarding divine administration and the operation of secondary causes and the nature of miracles likewise comes in here. A study is also made of the order postulated by Augustine for the appearance of things on this earth. A very important part of this chapter is the section dealing with man, his origin and appearance upon this earth. The fifth and last chapter of the book is entitled Augustine and Evolution. By applying the conclusions arrived at in the two previous chapters, a solution is found for the question: Was Augustine an evolutionist? This is in some respects the most important part of the book. While the controversy has centered around the meaning of the *rationes seminales,* the purpose has been to determine whether Augustine's authority could be called upon to support the theory of evolution or not. To many the answer given may seem to lack definiteness, but since evolutionism in its modern aspects dates back only to the time of Lamarck, it can hardly be expected that Augustine could have taken a definite attitude toward it sixteen centuries ago.

In a study of this kind there is a natural tendency to read into an author one's own preconceived notions. The contradictory opinions attributed to St. Augustine amply demonstrate this truth. The writer has sought earnestly to avoid this tendency. He has never been an enthusiast for or against evolutionism and does not begin this study with the hope of proving any pet theory. It is with the hope of shedding some light on the teachings of a great saint and scholar and to advance a step nearer to the solution of a vexed question that he undertakes the work.

The texts from St. Augustine, quoted throughout this work, unless otherwise designated, are from the Benedictine Edition (Paris, 1679-1690), reedited and included in

the Migne *Patrologiae Cursus Completus,* vols. XXXII-XLVII. Comparisons have been made with the *Corpus scriptorum ecclesiasticorum latinorum,* published in Vienna, but in no case have essential differences been noted. The texts from St. Thomas have been derived from various editions and these are indicated in the bibliography.

CHAPTER I

ST. AUGUSTINE

1. The Age of Augustine

The Roman Empire, at the time of St. Augustine, presents a spectacle of confusion. The disintegration which was to result in the complete dissolution of the political organization of the Caesars had already set in. Corruption, dissension and disloyalty had weakened it from within and from without the barbarian masses from the North were disputing its sway. In 410, the undisciplined forces of Alaric were clamoring at the gates of Rome and the Vandals were surging around the walls of Hippo when its great bishop breathed his last in August, 430 A. D. Pagan licentiousness was making its last stand against the Christian principles of self-denial and pagan culture was about to succumb to the crude civilization of the Goths.

Christianity had been victorious in its struggle for recognition. Heresy, however, was rife and the leaders in the Church were devoting their energies and talents to clarifying and defending her doctrines. The Eastern Fathers with their genius for metaphysical speculation attempted to express these doctrines in terms of philosophical exactness, while the more practical-minded Western thinkers studied them in the light of Apostolic tradition and faith. It was reserved for the brilliant mind of Augustine to combine the two and produce a body of thought that was to leave a permanent mark upon the development of the Church.

The struggle between new and old ideas quite naturally extended to the field of philosophy. The schools of Alexandria had witnessed the first attempts to effect a reconciliation between the philosophies of the Greeks and the teaching of Christ. The distinction between Philosophy and Theology was not yet realized. The self-sufficiency of

reason was pitted against the necessity of revelation in arriving at truth. "The third century saw the rise of Neo-Platonism, the final utterance of the speculative genius of Greece."[1] That utterance is important for our study because of the influence which it was to have in the formation of Augustine, at the end of the following century. The founder of this system of thought, Plotinus, was from Alexandria, but he wrote his *Enneads* at Rome. In it he attempts to harmonize the doctrines of Plato, Aristotle and Zeno. Penetrating the whole system is a spirit of oriental mysticism. Christian writers used it to support their doctrine of a spiritual world, and some of them adopted it almost in its entirety.

Of special interest to us because of its similarity to Augustine's doctrine of the *rationes seminales* is the teaching regarding the World-Soul which emanates from the *Nous* and which is the activating principle of the world. In this World-Soul are the generative principles (λόγοι) of sensible nature. These are but a reflection of the archetypes, existing eternally in the *Νοῦς*. The world of sense has reality only in so far as it bears the mark of its ideal archetype. Plotinus rejects dualism; for him spirit is the only reality. We shall see that this differs from Augustine's theory in several important respects; nevertheless, there is in the idea of the archetypes and the formative principles the germ of the latter's system.

While the influence of Plato was thus being extended by Plotinus and his followers, that of Aristotle was gradually disappearing. His works, particularly his *Logic,* were still accepted texts at Alexandria and to a lesser extent at Athens, but in the Western world they were scarcely known. Augustine makes but three allusions to them throughout his writings and it seems probable that the only work of the *Stagyrite* with which he was at all familiar was the *Categories* which he read in his twentieth year.[2] In the *De Civitate Dei,* he refers to Aristotle as *"vir excellentis ingenii et eloquii,"* but *"Platoni quidem impar."*[3]

[1] Burgh: *The Legacy of the Ancient World,* p. 286.
[2] *Conf.* IV, c. XVI.
[3] *De Civ. Dei,* VIII, c. XII.

The Greek Fathers, Basil and Gregory, had studied the works of the master at Athens and accepted him as their guide. The former had made a thorough investigation of the natural science of the Greeks and their various cosmogonies and had embodied his results in his work on the *Hexaemeron.* St. Ambrose of Milan had modeled his own treatise on the creation after that of Basil, and as Augustine was undoubtedly familiar with the works of the Bishop of Milan, it is probable that in this indirect way he became acquainted with the cosmological theories of Aristotle.

With the decline of Greek philosophy there was a corresponding lessening of interest in the natural sciences. Aristotle had formulated principles of scientific investigation and his pupil, Theophrastus, had applied them in his remarkable studies on plants. Dioscorides, a surgeon under Nero, and Gallen, physician to the Emperor, Marcus Aurelius, had both made advances in the field of medicine. Since they wrote in Greek, their work did not have among the Latins the influence which was exerted by the work of Pliny the Elder (23-79). His was a vast but unscientific compilation of fact and fiction which was nevertheless for a long time the recognized Natural History of Latin scholars.[4] At the time of Augustine, the interest of learned men was so absorbed by philosophical and theological problems that little attention was given to natural science. They learned and accepted the natural lore that had been handed down largely through the work of Pliny but made no effort to verify or extend it.

St. Augustine had great respect for the science of nature and insisted that interpreters of the Scriptures should attribute nothing to Revelation which was contrary to the proved teachings of natural scientists. Martin describes his attitude toward the natural sciences thus: "Saint Augustin ne tourna jamais expressément son effort vers l'étude de la physique et de l'histoire. Il se contenta de s'initier à ce que les hommes de son temps savaient de l'une et de l'autre. Il n'acquit donc jamais des connaissances curieuses de savant, et jamais non plus, il ne fut dominé par la préoccupation de découvrir les secrets du monde

[4] *The Development of the Sciences,* Chap. VI, *Biology* by Woodruff.

extérieur. Mais lorsque les savants avaient pour eux l'expérience, il entendait qu'on ne leur opposât ni une autorité, ni des principes; il voyait aussi que la science n'atteint pas le fond même des choses; et infin, il aurait été merveilleusement en état de bien juger toutes les découvertes ou toutes les nouveautes scientifiques, et de seconder en philosophie le progrès de la science."[5]

A review of the scientific doctrines of Aristotle which were current in Augustine's time reveals the fact that many of the principles which have entered into the discussion of modern evolutionary problems were known to the Greek master and his predecessors. In the writings of the *Stagyrite,* we find clearly expressed the principle of gradation in nature, *viz.,* that nature proceeds from the imperfect to the perfect. This probably was confined to the development of the individual, and it is very unlikely that the idea of the development of more perfect forms from less perfect forms were included. The Aristotelian principle of *potentia* and *actus* is likewise involved, particularly in the theories proposed by the geneticists. It is a metaphysical principle explaining the progress of continuity due to certain potentialities which under the proper influences become actual. The modern problem of adaptation, whether due to purpose or chance, is likewise discussed by Aristotle who decides quite definitely in favor of purposive adaptation.[6] Evolutionism generally considers man as the final product in a series of transformations. Aristotle's view was, given the gradations in nature, man stands at the head and all the inferior forms are for his service. The clash between Darwinism and Geneticism was foreshadowed by a difference of opinion between Empedocles and Aristotle. The former contended that survival depended on the animal's ability to adjust itself to its surroundings; the latter held that the principle of perfection was within the organism.

It will be found that many of these principles are used by Augustine in his system. For him, too, the progress of nature is a continuous development from what is poten-

[5] Martin: *St. Augustin,* p. 281.
[6] *De Coelo,* I, 4, 271A, 3.

tial to what is actual. This progress is from the imperfect to the perfect in virtue of an internal principle. Man also is the most perfect being and all things else are for him while he is for God. Just how much of this Augustine derived from Aristotle it is impossible to say, since some of these ideas are contained in other Greek cosmogonies. Naturally, in his conception of God, of creation and of the relation of creatures to the Creator, Augustine is far superior to any of the Greeks.

Even though Augustine has come down to us as a theologian rather than as a philosopher because of the fact that his efforts were devoted almost exclusively to the service of Christianity, nevertheless if an enduring and patient search for the truth marks the philosopher, then indeed the Bishop of Hippo was one. From his nineteenth year, when the burning words of Cicero fired his soul, until the end of his life his one great passion was to know the truth. When in the course of his development he reached the conviction that God was the source and measure of all truth, and that his own most important duty was to learn the relationship which he had with that God, the motive power of his life became the desire to know God and himself. *"Deum et animam cupio scire,"* he cries in his *Soliloquies, "Nihilne plus? Nihil omnino. Deus, semper idem, noverim me, noverim te."*[7] Regarding the effect produced on his mind by the reading of the Hortensius, he says: *"Ego ab usque undevigesimo anno aetatis meae, postquam in schola rhetoris librum illum Ciceronis, qui Hortensisus vocatur, accepi, tanto amore philosophiae succensus sum, ut statim ad eam transferre meditarer."*[8] He acknowledges too that it was this same book that led him to God: *"Ille vero liber mutavit affectum meum et ad te ipsum, domine, mutavit preces meas et vota ac desideria mea fecit alia."*[9] We shall see this same philosophical spirit pervading all his words.

2. The Philosophy of Augustine

If Augustine's philosophical attitude was inspired by the

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[7] *Soliloquia,* Lib. I, c. II, and Lib. II, c. IV.
[8] *De Beata Vita,* c. I.
[9] *Conf.* Lib. III, c. IV.

Hortensius, the content of his system was the result of two different influences, Christianity and Platonism. He tells us in his *Confessions* that he first learned to know and love the name of Christ from his mother,[10] and as long as he remained at home this Christian influence was dominant. However, at Madaura and even more so at Carthage, pagan teachers and corrupt morals gradually weakened the faith that was in him. As Boyer remarks, pagan teaching drove Christianity from his mind, and sensual love drove it from his heart.[11] Still it was a latent reverence for the name of Christ that kept him from turning completely to the pagan Greek philosophy when his interest was aroused therein by the reading of the *Hortensius.*[12] As a sort of compromise he turned to Manichaeism, attracted by its promise to provide the knowledge for which he longed. He never submitted to it entirely and after nine years, disappointed in his hopes, he rejected it. It seemed to him better than the others, but that was all. *"Et ieram per vias pravas superstitione sacrilega,"* he writes, *"non quidam certus in ea sed quasi praeponens eam ceteris."*[13] Discouraged by the failure of Manichaeism, he sought refuge for a time in the partial skepticism of the Academies.[14] Still there remained in him the confident hope that truth was attainable, and when he arrived at Milan and listened to Ambrose that hope was revived.

It seems certain in spite of the arguments of Harnack and others (cfr. n. 2) that Augustine's submission to the Church preceded his adoption of Platonism. Convinced of the legitimacy of the Church's authority he submitted unreservedly to her teaching. Afterwards his philosophic attitude led him to seek an explanation for the doctrines of the Church in the light of Platonic principles. Montgomery says: "He tells us in the *Dialogue Contra Acad.,* III, 43, he had already made the decision to believe, on the grounds of authority. The question which remained—the question raised by the Academic Skepticism with which we find him

[10] *Conf.* Lib. I, c. XI.
[11] Boyer: *La Formation de St. Augustin,* p. 30.
[12] *Conf.* Lib. III, c. IV.
[13] *Conf.* Lib. VIII, c. VII.
[14] l. c. Lib. V, c. X.

still wrestling earnestly in the *Dialogues*—was whether a purely intellectual certainty could be reached. The determination to believe stood fast, but the restless intellect ceaselessly endeavored to reach the same conclusions along its own lines."[15] Augustine understood clearly the relation between reason and authority. His attitude is summed up in the conclusion of the work against the Academics. *"Nulli autem dubium est gemino pondere nos impelli ad discendum, auctoritatis atque rationis. Mihi autem certum est nusquam prorsus a Christi auctoritate discedere: non enim reperio valentiorem. Quod autem subtilissima ratione persequendum est; ita enim jam sum affectus, ut quid sit verum, non credendo solum sed etiam intelligendo apprehendere impatienter desiderem; apud Platonicos me interim quod sacris nostris non repugnet reperturum esse confido."*[16] After personally enduring the agony of doubt for many years and observing the contradictory opinions and endless disputes of those philosophers who depended only on reason, Augustine sought the sure refuge of competent authority to attain the truth. Having found the truth, he sought to grasp it with his intellect. This is the principle expressed by the Scholastics in the phrase *credo ut intelligam.*

However, he realized fully the importance of reason. While in acquiring knowledge we accept things first on authority, still in fact reason comes first. *"Ad discendum item necessario dupliciter ducimur, auctoritate atque ratione. Tempore auctoritas, re autem ratio prior est."*[17] Before accepting anything on authority, we determine by reason whether the authority is credible. *"Quis non videat, prius esse cogitare quam credere? Nullus quippe credit aliquid, nisi prius cogitaverit esse credendum."*[18] With Christianity and Platonism as his authorities, Augustine set himself to the task of working out a system of philosophy. Since the former was divine and the latter human, in case of conflict, the human had to give way to the divine. He accepted the principles of Platonism in so far as they

[15] W. Montgomery: *St. Augustine, Aspects of His Life and Thought*, p. 64.
[16] *Contra Acad.* III, XX.
[17] *De Ordine*, Lib. II, c. IX.
[18] *De Praedestinatione Sanctorum*, c. II.

could be reconciled with Christianity and rejected those that could not.

Janet and Seailles mention six important principles in Augustine's system which are common to Christianity and to Platonism.[19] They are: 1. The world is the work of God's goodness; 2. Time is the image of eternity; 3. The world and time began at the same moment; prior to the existence of the world there was no time; 4. Evil is something negative, the negation of good; 5. Man's greatest happiness is found in union with God; 6. Happiness is the reward of virtue; misery, that of vice. Evil comes from man. God permits it and in His providence can turn it into good. On the other hand, Augustine rejected as contrary to Christian philosophy the Platonic doctrine regarding the nature of God and His relation to man; the origin of the soul and its union with the body; the destiny of the soul; creation and the origin and purpose of the world.[20]

It is certain that Augustine held Platonic philosophy in the highest esteem. His terminology and many of his theories even taken in whole or in part from it.[21] Still its influence has probably been exaggerated. As he grew older he turned more and more away from the pagan philosophers and to the Scriptures.[22] In his *Retractationes* he admits that his praise for Plato and his followers was excessive.[23] As early as the year 390, in his defense of the true religion, he says that Plato's writing is more pleasing than persuasive.[24] While the great Bishop is philosophical in thought, still it is true that he never made a clear-cut distinction between philosophy and theology. It remained for the Scholastics of the thirteenth century to accomplish this task.

Such then were the attitude and the influences under which Augustine attempted to work out the problems that confronted him. These problems can be reduced to three heads: 1. What is the first cause of all beings that are

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[19] *Histoire de La Phil.*, p. 820.
[20] Nourrisson: *Philosophie de St. Augustin,* vol. I, p. 63.
[21] *Contra Acad.* Lib. III, c. XVIII.
[22] *Conff.* Lib. VII, c. XXI.
[23] *Retract.* Lib. I, c. I.
[24] *De Vera Relig.* Lib. I, c. II.

included in nature? 2. What is the source of knowledge and of truth? 3. What is the highest good and the purpose of life? This division was of special interest to him because he saw in it an image of the Trinity, the answers to the questions being reducible to the one object, God. Since God can be known only in the soul, the ultimate aim of philosophy for him was to know God and the soul.[25] However, taking the questions separately the first is of special importance in this study. It is Augustine's answer to the question of the origin and development of the world and its beings, found in his interpretation of the first chapters of Genesis, that we have attempted to set forth in the following pages. His interest in this question will be discussed separately.

In regard to the possibility of acquiring knowledge, Augustine denied the assertion of the Academy that only probability could be attained and held that certitude is possible.[26] Man acquires knowledge in two ways, through the data of the senses and by introspection. He considered the senses trustworthy and he held that the mind passing from the evidence of the senses to its causes would ultimately arrive at the source of truth in God.[27] By introspection he did not mean immediate intuition of God in the sense of the Ontologists, but a study of our intellectual processes as revealing the certainty of our existence and ultimately that of God.[28] All things exist according to plans present from all eternity in the mind of God. These he called *rationes aeternae, rationes causales* or *rationes primordiales.* The last two terms are also applied by him to these plans implanted by God in nature. However, he makes a sharp distinction between these two kinds of existence. Man by his senses or intellect perceives these plans as they exist in things but not as they exist in God, as the Ontologists hold. There is evidence here of Platonic influence, but Augustine's conception of the origin and function

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[25] *De Civitate Dei,* Lib. XI, c.XXV.

[26] Cfr. Turner: *History of Philosophy,* p. 226 ff.; also Ueberwegs: *Geschichte der Philosophie,* vol. II, p. 157.

[27] *De Gen.* ad Lit., Lib. IV, c. XXXII.

[28] *De Vera Relig.,* c. XXXIX ff.

of the ideas is quite different from that of Plato.[29] As God is the cause of all things and the source of all truth, so too He is the highest Good. Man's greatest happiness is to know God and for that he is destined. He must so live here that he may attain that happiness hereafter. Virtue is the art of living rightly.[30]

We have seen that one of the three divisions of Augustine's philosophy deals with the problem of the cause of the beings that comprise nature. The question of the cause in itself did not offer him much difficulty. The consideration of the world had led him to the unchangeable truth, God. The imperfection of the one compared with the absolute perfection of the other had brought him to the conviction that the world and God were distinct and that the former was dependent for its existence upon the latter. His Christian and Platonic influences revealed to him the idea of creation and he readily accepted the truth that God made all things out of nothing. For him there was no possibility of emanation, or of eternal matter. The origin of the world did not mean the formation of the world out of preexisting matter, but the making of something out of nothing. At this point, however, his difficulties began. The questions, how did God create the world, what was its original form and how did it reach its present form, perplexed him for many years.

3. Augustine's Interest in Genesis

In the fourth century, interest in the natural sciences was at a low ebb. Since the time of Aristotle very little progress had been made in the investigation of natural facts. On the other hand, it was an age of religious controversy due largely to the rapid spread of Christianity. With this went a keen interest in the Bible. Consequently it was rather in the Scriptures than in nature that an answer was sought to the questions proposed above. The first two chapters of *Genesis* became the textbook of Cosmology for the Fathers and their antagonists. St. Augustine was in this respect true to the spirit of his age. He was not

[29] Boyer: *L'Idée de Vérité;* Conclusion, p. 253.
[30] Martin: *St. Augustin,* p. 234 seq.

particularly interested in science but he respected it and throughout his work he shows that he was well acquainted with the scientific theories of his day.[31] He was, however, intensely interested in the creation account in *Genesis.* He tells us in his *Confessions* how he pondered over the meaning of the "days" and how he prayed for enlightenment on this subject. *"Audiam et intelligam, quomodo in principio fecisti caelum et terram. Scripsit hoc Moyses, scripsit et abiit, transiit hinc a te ad te neque nunc ante me est. Nam si esset, tenerem eum et rogarem eum et per te obsecrarem, ut mihi ista panderet, et praeberem aures corporis mei sonis erumpentibus ex ore ejus."*[32] Even in the *City of God,* written at a much later period, he still complains of the difficulty he has in understanding the "days."[33]

The first work in which Augustine treats ex professo of these chapters of *Genesis* is the *De Genesi Contra Manichaeos.* It was written in the year 389, but two years after his Baptism and while he was living with his friends in his solitude near Tagaste. The purpose of it was to defend the Scriptures, particularly the Old Testament, against the charges of the Manichaeans. He refers to it thus in the *Retractationes: "Isti tamen duo libri apertissime adversus eos editi sunt in defensionem veteris legis, quam vehementi studio vesani erroris oppugnant."*[34] Ambrose had shown the young rhetorician the possibility of giving to many of the passages of the Old Law a spiritual or symbolical meaning. This manner of interpretation allowed wider scope to his natural literary tendency, and he uses it almost exclusively in this work against the Manichaeans. He tells us that at this time he did not dare to give a literal explanation. *"Cum de Genesi duos libros contra Manichaeos condidissem; quoniam secundum allegoricam significationem Scripturae verba tractaveram, non ausus naturalium rerum tanta secreta ad litteram exponere, —."*[35] This work consequently is not of great importance in our present study.

Four years later, in the year 393, Augustine made his

[31] *Conff.* Lib. V, c. V.
[32] l. c. Lib. XI, c. III.
[33] l. c. Lib. XI, c. VI.
[34] *Retract.* Lib. I, c. X.
[35] l. c. Lib. I, c. XVIII.

first attempt to give a literal interpretation of Genesis. He soon realized that he was not yet ready for the task and abandoned it. *"Volui,"* he says, *"experiri in hoc quoque negotiosissimo ac difficillimo opere quid valerem; sed in Scripturis exponendis tirocinium meum sub tanta sarcinae mole succubuit."*[36] When the unfinished work came into his hands at a later period he decided to destroy it, but afterwards changed his mind and ordered that it be included in his works under the title *De Genesi Ad Litteram Imperfectus, liber unus.*, in order that it might be an *"index—non inutilis rudimentorum meorum in enucleandis atque scrutandis divinis eloquiis."*[37] Since a subsequent attempt, made almost ten years later, was successful, Augustine makes no effort to correct or defend this incomplete book, simply referring his reader to the latter work. The *liber imperfectus* is of importance, therefore, only in showing the development of Augustine's thought.

The next discussion of this subject is found in the last three books of his *Confessions*, published about the year 400. There are numerous references to *Moses* and *Genesis* throughout this work, but in Books XI to XIII he considers these chapters exclusively. *"A primo usque ad decimum de me scripti sunt: in tribus caeteris, de Scripturis sanctis."*[38] The reason for including this discussion in this work is not at first obvious, but Gibb and Montgomery suggest that: "Having described in Book X his religious and moral condition at the time of writing, Augustine next proceeds to outline what might be called, in modern phraseology, his 'theological position.' To do so in the form of an exposition of *Gen. I* was quite in accordance with the customs of the time."[39] There is in this treatment a mingling of the allegorical and literal interpretations and it is animated by the same mystical spirit which pervades the whole work.

The matured opinions of Augustine on the meaning of *Genesis*, the result of years of serious thought, are found in the twelve books of the *De Genesi ad Litteram*. He began

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[36] Ibid.
[37] Ibid.
[38] l. c. Lib. II, c. VI.
[39] *The Confessions of Augustine*, by Gibb and Montgomery, Intro. to Bk. XI.

this in 401 and did not complete it until 415. In it he abandons the allegorical interpretation and tries to give the literal meaning of the words. In the following pages I have attempted an exposition and explanation of his conclusions expressed in this work. The author's narration covers the history of *Genesis* from the beginning to the expulsion of Adam and Eve from Paradise. It is most thoroughly done, every possible point at issue being considered. As the *Admonitio* in the Benedictine edition of Augustine's works says: *"Non praeterit ullum apicem, nihil quod non omni ratione verset penitiusque rimetur."*[40] His purpose is to show that there is nothing in this history that is not literally true, nothing that is contrary to reason or to nature. Here and there his exuberant spirit has led him into discussions that seem unnecessary, as for instance, in the second book, where he refers to the *Genethliaci*,[41] or in the fourth, to the perfection of the number six, etc. The twelfth book is a discussion of the heavenly paradise and of the vision of St. Paul.

While there is much in the work that is original there is no doubt that Augustine was influenced by previous interpretations of the Fathers, especially those of the Greek Fathers, St. Gregory and St. Basil.[42] However, Augustine's exposition far surpasses that of the other Fathers. Zahm, comparing Gregory and Augustine, says: "But wonderful as were the scientific intuitions of St. Gregory of Nyssa, they were eclipsed by those of the illustrious Latin Doctor, St. Augustine. . . . . But, distinguished as he (Gregory) was among the exegetists of his day, and notwithstanding the fact that he was *facile princeps* among the intellectual giants of his time and race, the Bishop of Nyssa had neither the genius nor the erudition nor the comprehensiveness of view that we admire in the prelate of Hippo."[43] In our present study, therefore, the *De Genesi ad Literam* is by far the most important of all Augustine's works.

In the *De Civitate Dei,* Augustine again returns to his

[40] Admonitio, *De Gen. ad Lit.*, Benedictine Edition, edition by Migne.
[41] *De Gen. ad Lit.*, Lib. II, c. XVII.
[42] Dorlodot: *Darwinism and Catholic Thought*, p. 80.
[43] Zahm: *Bible, Science and Faith*, p. 70.

favorite subject of *Genesis*. In the eleventh Book, where he begins his discussion of the two cities, he devotes several chapters to the Mosaic account of the creation.[44] In it he answers the objections against the theory of creation based on a conception of the previous existence of time and space. He also goes into the meaning of days and an explanation of light. In the following Book he speaks of the origin and unity of the human race and the duration of the world.[45] There are also several chapters important for our study in the third Book of the *De Trinitate*, where Augustine gives an explanation of miracles and incidentally makes clear his distinction between the ordinary providence of God and the extraordinary. This involves, too, his doctrine on the operation of secondary causes.[46] *The Retractationes*, containing Augustine's final comments on his own works, are of course important. It is noteworthy that in reviewing the *De Genesi ad Litteram* the aged doctor makes only a few very minor corrections, showing that the opinions expressed there were retained to the end of his life.[47]

Thus if there are disputes regarding the doctrines of Augustine, they are not caused by lack of evidence. Besides the many lengthy discussions just mentioned there are references to some phase or other of this problem in many of his minor works and in several of his letters. In fact the very abundance of the matter may be a hindrance rather than a help. At times the searcher in these works finds himself engulfed, not knowing how to bring order in it all. It is only by a thorough acquaintance with the mind and style of the doctor that one is able to understand his doctrines and present them clearly. There is much difference between the style and method of Augustine and that of Thomas Aquinas. The former lacks the precise terminology, the orderly method and the simple construction of the latter. In the writings of the rhetorician, we find a frequent use of the antithetic construction[48] to secure emphasis; word plays are numerous—"*Modo et modo non habebant*

[44] *De Civitate Dei*, Lib. XI, cc. IV, V, VI, VII, IX, XIX, XX.
[45] Lib. XII, cc. IV, V, X, XII, XIII, XV, XXI, XXIII, XXV.
[46] *De Trinit.* Lib. III, cc. IV-X.
[47] *Retract.* Lib. II, c. XXIV.
[48] *De Gen ad Lit.*, Lib. VI, c. VI.

modum"[49]—and his use of the metaphor is one of the most striking features of his style. Montgomery calls attention to expressions that have a truly modern ring. "One had supposed that the phrase 'swelled head' was a piece of very modern slang, but it is difficult not to think of it when you read, '*nimis inflata facies claudebat oculos meos*,' and the additional touch suggesting why this condition should result in blindness has a value of its own."[50] The richness and variety of his wording and phraseology adds beauty indeed to his language, but it also makes it the more difficult to understand and the interpreter who depends upon isolated words or sentences is very apt to get the wrong impression. Extensive reading and serious reflection are necessary for the student who would obtain a correct understanding of Augustine's thought and principles.

The conclusions attributed to Augustine in the following pages are for the most part those which he himself derived from his consideration of the Scriptures. It will be well, therefore, to explain briefly his attitude towards the revealed writings and his principles of interpretation. First of all he believed that careful study was a necessary prerequisite for anyone who would understand and explain Scripture. He reminds those who boasted that they could do this without such instruction, that it was from human teachers that they themselves learned to read.[51] This instruction ought to embrace the languages in which the Scripture is written, Hebrew and Greek. A general knowledge of history with which the events narrated in the Bible can be related, an acquaintance with the conditions surrounding the sacred writer for a correct understanding of allusions, references, etc., were likewise essential.[52] The proper object of *exegesis* is to discover what the author actually meant.[53] In this respect he is not as strict as modern critics demand. He says, for instance: "While, therefore, every one endeavors to understand the Scriptures in the sense intended by him who wrote them, what

[49] *Conff.* VIII, XII.
[50] Montgomery: *St. Augustine*, p. 29.
[51] *De Doct. Christ.* Prol. 4.
[52] Ibid, Lib. II, c. LIX.
[53] *Conff.* Lib. XII, c. XVIII.

harm is it if he understands something that is true, even if the author intended some other truth?"[54] Obscure passages are to be explained in the light of others whose meaning is plainer.[55] He is fond of allegorisation, but he insists that the allegorical sense must be based on the literal sense.[56] Comparing the truths of Scripture with the facts of science, he insists there can be no contradiction between them. He advises theologians to be careful not to assert as certain that which is uncertain[57] and assures them that it can be shown that whatever is demonstrated to be true from nature is not contrary to the Scriptures; on the other hand, we can show or readily believe to be false anything that is contrary to our faith, for God would not deceive us by false teaching.[58] Miracles, he holds, are possible and consistent with God's plans, but we are not to look for them in the ordinary course of nature.[59]

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[54] Ibid.
[55] *De Doct. Christ.*, Lib. II, c. XIV.
[56] *Sermo* II, c. VI.
[57] *De Gen ad Lit.*, opus imperfectum, Lib. IX, c. XXX.
[58] *De Gen. ad Lit.*, Lib. I, c. XXI.
[59] l. c. Lib. IX, c. XVIII. This point is discussed more at length in chapter V of this work.

CHAPTER II

THE THEORY OF THE RATIONES SEMINALES

1. Before the Time of St. Augustine

St. Augustine was not the first to use the term *Ratio Seminalis*. It is found in earlier Latin writers and also in its literal equivalent in Greek philosophies. The theory itself in modified forms goes back to a very early date. It survived and was used in various ways even up to recent times. In this chapter an effort will be made to trace its history both as a preparation for the particular study of St. Augustine and to show its subsequent importance.

From the very beginning men have observed the action and reaction going on in things round about them. They have experienced likewise the influence of conflicting forces within themselves and the possibility of exerting their own powers upon things outside of themselves. The effort to explain these forces and their reciprocal action, the problem of changing and becoming, has ever been the basis of philosophy. The relation of these activities with ourselves and a supreme being or beings has likewise been involved in this problem. The earlier pagan philosophies attempted a solution of the difficulty by identifying this activity with God and thus they fell into pantheism. Later when Christianity was introduced, it opposed monism and taught that God and the world are really distinct, though it is by God's power that the world is kept in existence and that activity is possible. We have, therefore, two explanations of immanent action. The first, the pantheistic explanation, is called absolute immanence; the second, the christian explanation, is called relative immanence. The defenders of both opinions have had recourse to the *rationes seminales*.[1]

The earliest Greek philosophers of whom we have record attributed the origin of things to water, air or fire. They

[1] Cfr. Thamiry: *De Rationibus Seminalibus*, p. 9.

endowed the material element with a kind of life and thus their system is called Hylozoism. Thales, about 620 B. C., is said to have taught that the beginning of all things was water and that the earth is floating on water. Anaximines, in the succeeding century, held that air is the source of everything. The air is God, he said, and is immense, infinite and always in motion.[2] Empedocles was the first to speak of the four elements, earth, air, fire and water. The constant motion of these, induced by love and hate, is the cause of all things that exist. We have evidence here of the conception of a germinal development. Anaxagoras, *circ.* 500 B. C., rejected the idea of the four elements and taught that there was an infinite number of prime substances, which were eternal, but of themselves inert. Their movement was caused and controlled by Νοῦς, a thinking rational essence. He calls these primary substances, seeds, Σπέρματα. This is, as far as we know, the first instance of the use of this word. The exact nature of the Νοῦς is indetermined and this system can hardly be called a dualism. According to Heraclitus, the development of things is due to an eternal fire, which produces everything under the influence of a law of number.[3] Democritus is important in our study. He taught that matter is composed of atoms, from the continuous motion of which all things result. The movement of these atoms is not due to chance but is according to a plan or reason (*ex ratione,* ἐχ λόγου).[4] Thus far then we have a nucleus of the theory of the *ratio seminalis* Anaxagoras called the constitutive elements of matter *semina,* or seeds, and now Democritus suggests that these elementary substances are influenced in their activity by a power outside of themselves. At this time the Sophists held up the progress of philosophic thought and by their contradictory opinions and skepticism caused the utmost confusion.

A reaction against the materialism of the Physicists was introduced by Socrates. He turned his attention to the

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[2] Cicero: *De Natura Deorum,* I, 10.

[3] Cfr. Janet et Seailles: *Hist. de la Phil.,* p. 714.

[4] Cfr. L. Mabilleau: *Hist. de la Phil. Atomistique,* liv. II, c. IV, p. 39-50.

principles of knowledge as a basis for morality. His disciple, Plato, carried on the investigations started by his master, and developed a system which is very important for us because of the influence which it had in the formation of St. Augustine. Plato thought that concepts or ideas were entirely separate from matter and in them the truth was to be found. The idea is the element of reality in things, immutable and everlasting. It alone possesses reality, the reality of being and the reality of knowledge. The ideas are active, efficient causes. For every concrete being there is a corresponding idea. The phenomenon partakes of the idea but in so far as it is part non-being, it is imperfect. Matter, according to Plato, is a negation; it exists objectively, but still lacks reality. The world is the result of the union of ideas. It was brought into existence by God and endowed with a world-soul or Νοῦς all phenomena being fashioned by the Creator according to the eternal idea or prototype. Since matter was eternal this formation of the world was not an act of creation, strictly speaking, but an organization. The world of phenomena developed out of chaos according to an intelligent design and for a definite purpose. God or the supreme Idea is distinct from the world which He organizes, though at times Plato seems to identify God with the world-soul. Thus we have in the Platonic system an indefinite dualism which is to find its perfection in Aristotle.[5]

Aristotle denied the existence of Plato's world of ideas and taught that the essence of things is within the individual itself, not outside of it. This essence is the form or *ratio* which completes matter in its being and is the source of its activity. It is the efficient cause of all its phenomena, the immanent principle which perfects the pure potency of the prime matter, by reducing it to actuality. There is in the matter a natural aptitude for its form. Thamiry points out that there is in this system of Aristotle a certain concept of the *rationes seminales.*[6] First, he says, there is, according to the *Stagyrite,* a certain inherent propensity in the matter for the form by which it is perfected;

[5] Turner: *Hist. of Phil.,* p. 98 seq.
[6] Thamiry: *De Rationibus Seminalibus,* p. 14.

while the form itself is latent in the potentia of the matter after the manner of a germ. For in the Aristotelian system the latent form does not require an external efficient cause to make it actual but has within itself the active power to effect the transition. God, the pure act, is conscious only of Himself, but He attracts things to Himself and thus there is in all things a natural inclination to become act. This is the meaning of the statement, *"Ens immobile movet, quatenus est amoris objectum."*[7] The movement from potency to act is the result of an internal development called forth by this attraction towards the supreme Being. Thus the theory of *Actus* and *Potentia,* which runs through the whole of the philosophy of Aristotle, implies the existence of latent active and passive powers which are to evolve under the influence of an external attraction. This is in reality a theory of the *rationes seminales.*

The third and final phase in the development of the theory is found in the doctrine of the Stoics. They were heirs to the philosophies of Plato and Aristotle which, as we have seen, contained the nucleus of the theory of the *rationes seminales.* They rejected the dualism of Aristotle and revived the doctrine of Heraclitus of a principle of fire. For them nothing existed but matter. However, adapting the thought of Aristotle, they distinguished between active matter, or the principle of fire, and passive matter. The fire is the soul of the world and exists in passive matter. They called this soul of the world the seed (semen) of the universe.[8] In it were contained the reasons or plans (γόλοι) of all changes and the germs as it were of all future forms (σπέρματα) which were to evolve according to the laws of the universal Reason. They were the *rationes seminales* (γόλοι σπερματίκοι) by which the universal reason or Fire produced all things. Fire or God, as the principle of activity, informs and moves matter, which is the principle of passivity. Thus the theory of the *rationes seminales* is used to explain a doctrine of absolute immanence.[9]

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[7] *Metaph.*, Lib. XI, edit. Bekker, p. 1072.

[8] Οὐσία οἷον εἰς σπέρμα τό πῦρ Cleanthes. cfr. Bauemker: *Das Problem der* Materie, p. 354.

[9] Thamiry: *De Rationibus Seminalibus,* p. 15.

The doctrine of the Stoics flourished in Rome for some time, but in Alexandria a group of Jews were trying to reconcile the teachings of the Bible with the philosophy of the Greeks. Their leader was Philo. He retains the word *Logos* because of its use in the New Testament as the Word of God and also because of the Stoic phrase λόγοι σπέρματίκοι. We see here the first evidence of Christian influence in the interpretation of the *rationes seminales.* Thamiry shows how under this new influence the theory was extended to embrace the intellectual and supernatural order, but since we are interested in it as a cosmological explanation only, we shall confine ourselves to its use in that field.[10]

Before tracing the theory of the *rationes seminales* in the writings of the Fathers, it will be well to mention its use in Neo-Platonism, since this system undoubtedly influenced Augustine. The foremost exponent of this revival of Plato's doctrines was Plotinus. He lived in the third century after Christ but Christianity exercised very little influence over him. He sought to reconcile the doctrines of Plato, Aristotle and Zeno with the Oriental religions. He starts with the notion of God, whom he describes as the One. By a process of emanation from the One, there came into existence the *Nous* (Νοῦς) or intelligence, and from the *Nous* came the world-soul (Ψυχῆ). The world-soul gave rise to certain forces (λόγοι σπέρματίκοι) or *rationes seminales.* These combine with matter to form the material phenomena. They constitute the substantial form of sensible bodies. As the *Nous* is the image of the One, and the World-soul the image of the *Nous,* so these substantial forms are the images of the ideas emanating as active forces from the world-soul. Here then is a fully developed theory of the *rationes seminales.*

The early Alexandrine Fathers held the doctrine of simultaneous creation. According to them the world came into being in an instant just as it is today and consequently in their system there was no room for a development from potentiality to act. For the same reason there is no mention of the theory of the *rationes seminales,* at least not in their cosmological teaching. St. Justin, however, speaks

[10] Thamiry: Op. cit., p. 18.

of *"Verbi semina"*[11] with reference to the elements of truth found in the pagan philosophies. The Latin writer Tertullian uses the phrase *"quasi rationes seminales"*[12] for the natural virtues with which God has endowed man. It is in St. Basil and St. Gregory that we find the theory used in an interpretation of the Mosaic account of creation.

The theory of simultaneous creation of the Alexandrine school aroused the opposition of the schools of Antioch, Edessa and Caesarea. The leaders of these schools were respectively, St. John Chrysostom, St. Ephrem and St. Basil. From the extreme allegorism of the teachers of Alexandria they went to the opposite extreme of litteralism, in their interpretations of *Genesis.* Creation was extended, not simultaneously; the "days" were periods of twenty-four hours such as we know.[13] On the first day God created prime matter out of nothing and on the following days He formed out of this preexisting matter all the things mentioned by Moses. St. Basil held that on these days God did not form the various beings actually, but imparted to the original matter the power and the duty to generate them.[14] In this sense we have a theory corresponding to the *rationes seminales.* It is, however, no longer a theory of absolute immanence but of relative immanence only. God and the world are distinct. The divine Creator made the world out of nothing and endowed it with powers to develop the various forms that later appeared. He did not, however, abandon the world after creating it, but by His divine providence keeps it in existence and supports its activity. The *rationes seminales* thus become instrumental causes only since it is by the power of God they work out their effects.[15]

St. Gregory of Nyssa undertook to defend the teaching of his brother, St. Basil. Although not so brilliant he was

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[11] Cf. II *Apolog.* edit. Otto, cap. VIII.

[12] *"Ex alia parte intellectuales et morales hominis virtutes quasi rationes seminales, ad rationum idealium exemplar, nobis a divino Verbo inditas habent." Contra Marc.*, c. I, n. 10.

[13] Cfr. Zahm: *Bible, Science and Faith,* p. 52; also Dorlodot: *Darwinism and Catholic Thought,* p. 71.

[14] Dorlodot: Op. cit., p. 78.

[15] St. Basil: *Sermon on Providence.* No. XXII, Migne, P. G. t. XXXII.

a deeper thinker than his brother and soon realized the difficulties involved in the theory of extended creation and the solar day. Consequently, he fell back on the earlier opinion of simultaneous creation, adapting it to meet the objections of his opponents. According to him, God created all things at once. In the original condition there was only a formless and heterogeneous mass wh[illegible] however, contained potentially or virtually all [illegible] mentioned by Moses in t[illegible] narration of th[illegible] dot describes his theory [illegible]s: "The autho[illegible] creative act as a kind of [illegible]ulse by which Go[illegible]ff the world upon its evolution, which is to result in the production of all those things which constitute it at the present time—namely, the heaven, ether, stars, fire, air, sea, animals, and plants. All these things were contained virtually in the formless and homogeneous mass which was the immediate effect of creation, but none of these things then possessed actual existence."[16] Gregory calls the active powers with which God endowed original matter σπέρματίκοι δυνάμεις.[17] In origin and purpose they are the same as the *rationes seminales* of St. Augustine, the Greek word δυνάμεις emphasizing the idea of power, while the Latin, *rationes,* that of design. The Greek Father insists that these inherent powers, acting under the laws of nature, in accordance with the divine command, resulted in all the varied forms which we see on the earth today. This, however, is possible only through the concurrence of God's power. Of themselves the seminal powers are not able to bring about these effects; they are but the permanent instruments which God uses to effect His design.[18] In this system of St. Gregory we have a fully developed theory of the *rationes seminales* interpreted in accordance with Christian principles.

St. Augustine, searching and praying for an explanation of the Mosaic account of creation, grasped the possibilities of the theory of the *rationes seminales* and applied the powers of his intellect to its development. As we shall see

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[16] Dorlodot: *Darwinism and Catholic Thought,* p. 74.

[17] St. Gregory: *Homilies on the Xexameron,* Migne, P. G. t. XLIV, col. 77.

[18] Dorlodot: Op. cit., p. 120.

later, he took the Ideas of Plato and attributed to them eternal existence in the mind of God. He made a real distinction between the eternal reasons and their physical existence as seminal reasons in matter. In explaining the production of the latter he made use of the Alexandrine theory of the different grades of existence: 1, in the Word of God; 2, in the elements of the world, where they were created at the beginning; 3, in the first individuals of the various classes of beings, e. g., this plant or this animal; 4, in the seed produced by these plants and animals. From the Stoic λόγος σπέρματκίος he derived the term *ratio seminalis*. To the whole he added the Christian doctrines of creation and divine administration. It is impossible to say whether Augustine derived the various elements of his system immediately from their respective sources. It seems that he was not well versed in Greek and knew nothing of Hebrew and consequently he would depend largely upon Latin translations and commentaries. St. Ambrose was an admirer of St. Gregory of Nyssa and no doubt the future Bishop of Hippo was much influenced in his attitude by the Bishop of Milan, and thus indirectly by the Bishop of Nyssa. In the following chapters I have attempted to explain in detail the cosmological system which Augustine worked out under these several influences.

2. After the Time of St. Augustine

The references made to the theory of the *rationes seminales* by Catholic writers after the time of St. Augustine are for the most part interpretations of his doctrine. The most important of these, especially St. Thomas Aquinas, are quoted in the succeeding chapters and consequently need not be discussed here. In regard to the interpretations, Dorlodot says that he was not able "to find a single Christian writer previous to the Scholastic period who opposes the theory, or who endeavours to regard the *rationes seminales* of St. Augustine simply as material or passive powers."[19] From the time of the introduction of the Aristotelian principles in the thirteenth century, there

[19] Ibid, p. 68.

is a tendency either to disagree with the doctrines of St. Augustine regarding the origin of things or, in an effort to reconcile the two, to depart from the traditional interpretation. The differences were not based on Scriptural exegesis but on current scientific thought, especially that concerning the generating power of the sun and the stars, an opinion derived from Aristotle.[20] The explanation of Duns Scotus, in which he denies the active power of a seed and likewise of the *ratio seminalis*,[21] is based, as Cajetan points out, on the failure to make a distinction between a transitory and a permanent instrument.[22] Father Coakley, O.S.A., in his article in the Irish Ecclesiastical Record, quotes a number of mediaeval theologians who defended the traditional interpretation of St. Augustine against some of their contemporary opponents.[23] Renewed interest in the theory of St. Augustine has been awakened by the widespread attention given to the evolutionary hypothesis during the last half century. The varied opinions attributed to him by the antagonists and protagonists of this hypothesis are discussed in the following pages.

Outside the ranks of Scholasticism the theory of the *Rationes Seminales* has had quite a different history. Writers to whom the doctrines of Christianity were unknown or unwelcome, fell back on the pagan theories of the ancient Greeks, with their belief in absolute immanence. In the fourth and fifth centuries the Neoplatonic concepts were carried to Western Europe from Egypt.[24] The same thoughts appear again in the philosophy of John Scotus Eriugena in the ninth century. The primordial causes or types of all things were contained in the Word of God. The being of the creatures is the being of God, which is of course pantheism. This inclination to identify God and the world is found in some of the Scholastics, for instance, Abelard—*"Spiritum esse animam mundi"*[25]—and David of Dinant, whom St. Thomas severely condemns.[26]

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[20] l. c., p. 90.
[21] Joan. Duns Scotus, *Lib. II, Sent.* dist. XVII, q. 1.
[22] Cajetan: *Comment. in I St. Thomas*, q. CXVIII, a. 1.
[23] Irish Ecc. Rec., 4-S, Vol. V, p. 342.
[24] Funk, *Hist. de l'Eglise*, trad. Hemmer, I. p. 115-128.
[25] Cfr. Denz. no. 312.
[26] *Sum.* I. q. IV, art. 8.

The establishment of the Platonic Academy at Florence in the fifteenth century revived the doctrine of ideas and one of its leaders, Marsilius Ficinus, in commenting on the works of Plato and Plotinus, gives a truly Platonic view of the *rationes seminales.* Giordano Bruno presents a somewhat similar view with his doctrine of the living monads which existing in matter are the cause of all reality in nature.[27] Bruno's influence is evident in the teaching of Spinoza. With him the world is but an expression of the attributes of the divine essence. For everything that exists there is a corresponding idea which is the soul of the thing. These are not part of the divine substance but inhere in it. God, manifesting himself through these attributes, is the *natura naturans,* while the world is the *natura natura naturata.*[28] These modes or attributes are endowed with reason and evolve under the power inherent in them. We have here a theory quite consonant with that of the *rationes seminales.* Leibnitz placed the essence of things in monads, or simple substances. Their action is entirely immanent, since neither substance nor accident can enter a monad from without. In this respect they differ from the *rationes seminales,* which did admit the action of an etxernal agent. Each monad, however, does not differ in essence from God. It is endowed with reason and with certain latent possibilities which it strives to realize. The monads are conceived in much the same sense as the λόγοι σπέρματίκοι of the Stoics. They participate in the divine being just as do the *rationes seminales* of the Greeks in the *Anima Mundi.*

The Idealism of the seventeenth century turned the attention of thinkers to the problems of the intellectual and ontological order and away from the cosmological. The theory of the *rationes seminales* is used to explain the process of knowing, for instance, in the a priori forms of Kant. Since the publication of Darwin's Origin of Species, in the middle of the last century, there has been a revival of interest in the problems of natural development. Unlike the movements of the past, this interest has concerned

[27] Turner: *Hist. of Phil.,* p. 429.
[28] l. c., p. 471.

itself with the immediate facts of development and their explanation rather than with the question of origin and ultimate causes. It is true that there has been much philosophizing on the subject, but the dominant aim has been to get at the facts and their immediate causes. Consequently we do not find much evidence of a theory of the *rationes seminales*. Some Catholic scientists have used the theory, as explained by St. Augustine, to justify their adherence to the hypothesis of evolution.[29] The recently developed science of Genetics has brought forth an explanation of observed facts which has much in common with the ancient theory. This is discussed more fully in the chapter on Evolution.

With this outline of the history and the various conceptions of the theory of the *rationes seminales*, we are ready to make a detailed study of the meaning and application of the theory in the cosmological system of St. Augustine.

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[29] In strictly Catholic circles there is one man who has made a very skillful attempt to develop this theory as an apologetic weapon in the service of the Church. He is the Rev. Dr. Joseph Edward Thamiry of the University of Lille, France. In 1905, he published a thesis, entitled "*De Rationibus Seminalibus*," in which he explains the distinction between the pagan and the Christian application of the theory and shows how the latter may be used to defend the theological and philosophical teaching of the Church. In 1922, he published another volume, "*De l'Influence*," in which he studies the problems of reciprocal action in the fields of psychology, metaphysics and pedagogy, gives the different solutions that have been proposed, and finally his own solution based on the old theory of the *rationes seminales*. In both books he has a brief but thorough discussion of St. Augustine's understanding and use of this theory.

CHAPTER III

THE NATURE OF THE RATIONES SEMINALES

St. Augustine, as we have seen, searching for the true meaning of the Genesiac account of the creation, saw in the theory of the *rationes seminales* a possible explanation of that mysterious story. He undoubtedly was aware of the use which St. Gregory had made of it for the same purpose. While not satisfied with the interpretation given by the Bishop of Nyssa, he evidently felt that the fault was not in the theory but in his exegesis. Consequently he set himself to the task of subjecting the first three chapters of *Genesis* to a very critical study in the light of the same theory. The results of that study are found, as we know, in the *De Genesi ad Litteram.*

What, then, did Augustine mean by the *rationes seminales?* What was their nature? Whence did they come? It is evident that the correct answer to these questions will give us the key to an understanding of his cosmological theories. In this chapter an attempt will be made to answer only the first question. Modern writers have not tried to define accurately the exact nature of the *rationes seminales.* Were they seeds such as we know today? Were they germ cells? Molecules or atoms? Were they living or not? Were they corporeal at all? These questions have come again and again to the minds of those who have seen the references to St. Augustine in the modern treatises on Evolution.

The question as to the origin of the world and its primal condition, of the meaning of the "days" of Genesis, of the order and manner of the appearance of creatures upon the earth, will be left over for succeeding chapters. They are separate problems and in the system of St. Augustine at least they demand separate treatment. This cannot be done until we have decided upon some meaning of the *rationes seminales.* No attempt will be made to find English equivalents for these terms until their nature has been discussed.

1. The Use of the Terms

It is evident that the words *rationes seminales* are not used in their literal meaning. *Ratio* is from *reor, ratus,* to reckon or calculate, and means a reckoning or calculation. From this it was applied to the faculty of the mind which is capable of reckoning or calculating, namely, the reason. It is this sense which Augustine had in mind when he wrote: *"Ratio est mentis motio, ea quae discuntur distinguendi et connectendi potens."*[1] *Ratio,* then, refers to something spiritual and cannot be applied literally to a material thing. St. Thomas explains in the *Summa* how the word is used. He first reminds us that according to St. Augustine the powers included under the terms *rationes seminales* may exist in different ways: first, in the Word of God, as ideal reasons; secondly, in the elements of the earth, as universal causes; thirdly, in those things which came forth from the universal causes in the course of time, as in this plant or this animal; fourthly, in the seeds which are produced by these plants and animals. *"Hujusmodi autem virtutes activae et passivae in multiplici ordine considerari possunt: nam primo quidem, ut Augustinus dicit* 6 *super Gen. ad Lit.* (*cap.* 10) *sunt principaliter et originaliter in ipso verbo Dei, secundum rationes ideales. Secundo vero sunt in elementis mundi, sicut in universalibus causis. Tertio vero modo sunt in iis, quae ex universalibus causis secundum successiones temporum producuntur, sicut in hac planta, et in hoc animali, tanquam particularibus causis. Quarto modo sunt in seminibus, quae ex animalibus, et plantis producuntur."*[2] Now, says St. Thomas, in so far as these powers are in corporeal matter, they cannot strictly be called *rationes,* but in so far as they are derived from the ideal reasons of God, they may be so called: *"— etsi non possunt dici rationes secundum quod sunt in materia corporali: possunt tamen dici rationes per comparationem ad suam originem, secundum quod deducuntur a rationibus idealibus."*[3]

Again in his *Commentary on the Sentences,* he says that

[1] *De Ordine* II, 11.
[2] *Summa,* I, CXV, 1.
[3] Ibid.

these powers may be called *rationes* because in them there is realized the plan and intention of the divine intelligence just as in an artificial product the purpose of the worker finds expression: *"Hujusmodi virtutes activae in natura dicuntur rationes non quod sint in materia per modum intentionis, sed quia ab arte divina producuntur, et manet in eis ordo et directio intellectus divini, sicut in re artificiata manet directio artificis in finem determinatum."*[4] St. Thomas, by these words, clearly indicates how the word *rationes* is used in referring to natural powers existing in matter. An architect thinks out a plan for a house, makes a blueprint of it, and the house is built accordingly. The plan formulated in the mind of the architect is realized in the house. In so far then we might call that house the reason, *ratio*, of the architect. So, by analogy, the designs which preexisted in the divine intelligence found their realization in nature and similarly we call them *rationes*. There is, however, a distinction between the two, as we shall see later.

These powers are called seminal not because they were corporal seeds such as we can observe but because from them, as from seeds, all living things were to come. *"— et dicuntur seminales—quia rerum individuis primo creatis hujusmodi collatae sunt, per opera sex dierum, ut ex eis quasi ex quibusdam seminibus producerentur et multiplicarentur res naturales."*[5] Moreover they were to produce forms similar to themselves as seeds do *"— formae autem naturales sibi similes producere possunt; et ideo proprietatem seminis habent, et seminales dici possunt."*[6] St. Augustine says there is a similarity between these causes and seeds, but that they are prior to all seeds. *"Datur quidem de seminibus ad hanc rem nonnulla similitudo, propter illa quae in eis futura conserta sunt; verumtamen ante omnia visibilia semina sunt illae causae."*[7]

Having seen the reasons for the use of the terms *rationes seminales* it will be helpful to point out other expressions

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[4] *In II Sent.* Dist. XVIII, q. 1, art. 2.
[5] Ibid.
[6] Ibid.
[7] *De Gen. ad Lit.* VI, c. VI.

which Augustine uses in a similar sense. The words *rationes ideales* are used with reference to the plans as they existed in the mind of God. These are also called *rationes primordiales* and are thus explained by St. Thomas: *"Formae autem rerum secundum quod in arte divina existunt, primordiales esse dicuntur."*[8] The more common expression, *rationes causales,* is used either for the *rationes ideales* or the *rationes seminales.* This is evident from the clear words of the angelic Doctor: *"Ad quartum dicendum, quod ex verbis Augustini de hujusmodi rationibus seminalibus loquentis satis accipi potest, quod ipsae rationes seminales sunt etiam rationes causales; sicut et semen est quaedam causa; — sed tamen rationes ideales possunt dici causales, non autem proprie loquendo seminales."*[9] The reason why the *rationes seminales* cannot be called *ideales* is of course because they are the physical powers existing in matter, the effect of the *rationes ideales* but differing from these as matter from spirit. Other expressions used are *illis insitis rationibus, numerosae rationes, semina futurorum, primis rerum causis, omnium futurorum causae.* Some of these will be quoted again when the exact nature of the *rationes seminales* is being discussed. The purpose in calling attention to them here is merely to show that the terms *rationes seminales* were not used exclusively by St. Augustine to indicate a certain idea but with his usual richness in language and imagery he presents the same thought to us in many ways. It is to be noted, however, that there are three words which Augustine uses in some form to indicate the powers originally placed in the earth, *viz., rationes, causae* and *semina.* We have now to determine, if possible, just what these powers were which he so designated.

2. The Physical Form of the Rationes Seminales

The first question that arises in determining the nature of the *rationes seminales* is: did they have real physical existence or not? The answer is of course in the affirmative. Augustine says clearly that just as the seed contains

[8] *In II Sent.* l. c.
[9] *Summa,* I, CXV, 2.

invisibly everything which later appears in the tree, so the earth possessed everything which was to appear in the course of time.[10] These original causes were in the earth. *"— causales illae rationes quas mundo indidit,"* says Augustine,[11] and St. Thomas adds no less clearly, *"— tunc terrae datam esse virtutem germinativam."*[12] Since all interpreters answer this question in this same way, the point need not be discussed further.

Since the *rationes seminales* were physical and since Augustine at times calls them *semina,* the theory has been proposed that they were seeds. Suarez seems to have held this opinion. In his Tractate on the *Work of the Six Days,* he seeks to disprove the general theory of Augustine regarding the manner in which plants and animals came into being, by showing that the theory of original seed was contrary to Scripture and contrary to nature. *"Accedit praeterea,"* he says, *"specialis ratio in animalibus quia non possunt in semine produci."*[13] And again: *"Ergo facta sunt hoc tertio die, non ut semina, sed ut fructus, vel saltem in herba, sicut ad litteram narrantur facta —."*[14] But evidently he had heard of a contrary interpretation for he adds: *"Quod si fortasse quis dicat, per virtutem illam seu potentiam non intelligere Augustinum hujusmodi semina plantarum, sed aliam peculiarem virtutem terrae ad germinandum inditam: hoc eadem facilitate, qua dictum fuerit, rejiciendum est, quia neque in Scriptura habet fundamentum, neque ipse Augustinus hoc declarat, neque secundum naturas rerum explicari potest, qualis illa virtus sit."*[15] It is probably well to add here by way of explanation that Suarez writes only of *semina plantarum,* because he is treating of the origin of plants on the third day.

Before criticizing the seed interpretation of Suarez, another explanation of a modern author will be considered. Father Patrick F. Coakley, O.S.A., in an article entitled:

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[10] *De Gen. ad Lit.,* Lib. V, c. XXIII.
[11] l. c. Lib. VI, c. XIV.
[12] *De Pot.* IV, 2.
[13] *De Opere Sex Dierum,* II, VII, 2.
[14] Ibid. no. 3.
[15] Ibid.

"Was St. Augustine an Evolutionist?" calls the *rationes seminales* germs or cells.[16] Is it possible that by the *rationes seminales,* Augustine meant what our modern biologists call germ cells? The germ cells are those which are capable of reproducing themselves and are to be distinguished from somatic cells which have no reproductive power. We know now that all biological continuity is effected by cell division. It is through the cell that reproduction takes place, that physical inheritance is transmitted and physical development brought about. Of course, St. Augustine knew nothing of cell life, but would not these germ cells correspond to the *rationes seminales?*

It can be shown that neither seeds nor germ cells fit in with Augustine's conception of the *rationes seminales.* Both are actual definite forms of living beings. A seed, in the modern sense, is defined as a "young plant that is supplied with a certain amount of food and that has temporarily stopped growing."[17] Germ cells are the structural units of a living body, which are capable of reproduction. It is true that St. Augustine gave to the term seed a much wider meaning than do present day biologists. He applied the term to those germ cells which function in reproduction. However, it is quite evident that he did not mean seed, either in its narrow or its wider signification, when he developed his theory of the *rationes seminales.* He tells again and again that in that primitive condition beings did not exist actually but potentially. He compares them to seeds but he tells us plainly that they are not seeds. According to his theory, man also came into being at the same time as other living beings but like them only casually. In answer to an objection against this theory, he clearly states his position: *"Sed rursus, si dixero non ita fuisse hominem in illa prima rerum conditione, qua creavit Deus omnia simil, sicuti est non tantum perfectae aetatis homo, sed ne infans quidem, nec tantum infans, sed ne puerperium quidem in utero matris, nec tantum hoc, sed nec semen quidem visibile hominis; putabit omnino non fuisse."*[18]

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[16] Irish Ecc. Rec. 4-S, Vol. V (1898), p. 342.
[17] Curtis: *Nature and Development of Plants,* p. 127.
[18] *De Gen. ad Lit.* VI, VI.

Then after proving that man did exist at the beginning but in a different way than when he appeared as man upon the earth, he asks and answers wherein the difference consisted. *"Quaeret,"* he writes, *"ex me quomodo. Respondebo, postea visibiliter, sicut species humanae constitutionis nota nobis est; non tamen parentibus generantibus, sed ille de limo, illa de costa ejus. Quaeret tum quomodo. Respondebo, invisibiliter, potentialiter, causaliter, quomodo fiunt futura non facta."*[19] He realizes the difficulty of understanding this, for immediately he adds: *"Hic forte non intelliget."* And in an effort to make himself clearer, he continues: *"Subtrahuntur enim ei cuncta quae novit, usque ad ipsam semininum corpulentiam. Neque enim vel tale aliquid homo iam erat, cum in prima illa sex dierum conditione factus erat. Datur quidem de seminibus, ad hanc rem nonnulla similitudo, propter illa quae in eis futura conserta sunt; verumtamen ante omnia visibilia semina sunt illae causae."*[20] From these statements there can be no doubt that Augustine did not mean seed nor germ cells by his *rationes seminales.* The word *corpulentia* means in late Latin corporeity, or the state of having a body. This Augustine expressly denies to the seminal reasons. He does not by this deny that they are physical but that they have a definite proper bodily form. They resemble seeds not because of their form but because of the potentialities contained in them. Lest it be said that Augustine here is referring to the body of man only and not to plants or animals, it can easily be shown that as far as original condition is concerned he makes no distinction. All living things, plants, animals and man, were created potentially, causally.[21]

St. Thomas likewise makes it evident that he does not attribute to the *rationes seminales* any distinct proper forms. He draws a contrast between the manner in which they exist in the *rationes seminales* and that which they have later. *"Alia vero dicuntur esse producta in rationibus seminalibus tantum, ut animalia, plantae et homines; quae omnia postmodum in naturis propriis producta sunt."*[22]

[19] Ibid.
[20] Ibid.
[21] Ibid., c. V.
[22] *De Pot.* q. IV, a. 2.

Seeds and germ cells have their proper natures. Charles Boyer, answering a question proposed by himself regarding the precise manner of existence of the *rationes seminales*, says: "Il ne s'agit pas de concevoir ces raisons comme des germes proprement dits, distincts, constitués à part, visibles comme tels: elles ne ressemblent aux germes que par leur puissance d'avenir."[23] Dorlodot, referring to the passage wherein Augustine speaks of the creation of birds on the fifth day, says: "In this passage St. Augustine clearly denies that the subject containing the *rationes seminales* were, according to his hypothesis, created *ova* or seeds."[24] The passages quoted are sufficient evidence to show that by his *rationes seminales* Augustine did not mean cells, or any special created forms.

3. The Potentiality of the Rationes Seminales

We have seen thus far, first that the *rationes seminales* had physical existence in matter, and second, that this existence was not in the form of separate, distinct entities, as seeds, germ cells or *ova*. All living things were there, but *in potentia*, not *in actu*, as St. Thomas asserts, or as St. Augustine puts it: *"Quomodo fiunt futura non facta."* But then the question arises, in what did this potentiality consist? This is the crux of the whole matter. Given the correct answer and we have a key to the cosmological system of St. Augustine. But it is a question not easily answered and one that even in St. Thomas' time gave rise to conflicting opinions. In his *Commentary on the Sentences* he writes: *"Ipsae enim virtutes in materia positae, per quas naturales effectus consequuntur, rationes seminales dicuntur. Sed quid sint secundum rem rationes seminales, a diversis diversimode assignatur."*[25] That the difference of opinion has persisted to modern times is evident from the discussion carried on in the Irish Ecclesiastical Record between Father Phillip Burton, C.M., and Father P. F. Coakley, O.S.A.,[26] and by such conflicting statements as are found in the recent works of Father Henry Woods,

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[23] Boyer: *L'Idée de Vérité*, p. 129.
[24] Dorlodot: *Darwinism and Catholic Thought*, p. 83.
[25] *In Lib. II Sent.* Dist. XVIII, q. I, a. 2.
[26] Irish Ecc. Rec. 4-S, Vol. V (1899).

S.J., and Canon Dorlodot.[27] What these variant statements and opinions are we shall see shortly.

St. Thomas, in the article mentioned above,[25] gives three opinions which were current in his time. These shall be used as the basis of our discussion. The first is derived from the Aristotelian distinction between genus and species. According to its proponents, a specific form is not received in matter except by means of a generic form. Thus, they said, it is a different form which makes fire, fire, than that which makes fire a body. This incomplete generic form, they said, is called the *ratio seminalis. "Alii dicunt quod forma speciei non recipitur in materia nisi mediante forma generis; adeo quod est alia forma numero per quam ignis est ignis et per quam ignis est corpus. Illa ergo forma generalis incompleta ratio seminalis dicitur; quia propter talem formam inest materiae quaedam inclinatio ad recipiendum formas specificas."*[28] This theory Thomas promptly rejects, first, because the distinction between the generic and the specific form is a mental one only, since in fact every form gives substantial being and since the same thing cannot have a double substantial being, an additional form must be considered accidental. Secondly, this theory does not agree with that of Augustine in as much as an incomplete general form would not necessarily be followed by a special form. The possibility of it would be there but not the necessity as Augustine held. The interpretation thus refuted was maintained by a school of Realists whose basic principle was that the distinction between the generic form and the specific form had existence in reality and not merely in the mind, as was maintained by Aristotle and after him by Aquinas.

The second opinion mentioned by St. Thomas is that the *rationes seminales* are the incomplete powers preexisting in matter. According to Aristotle, its defenders argued, all forms are derived from the potentiality of matter, and therefore these forms must have preexisted incompletely in matter. They are incomplete because they are not per-

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[27] Henry Woods, S.J.: *Augustine and Evolution;* Canon Dorlodot: *Darwinism and Catholic Thought.*

[28] *In Lib. II Sent.,* Dist. XVIII, q. I, a. 2.

fect in their being and have not the power of acting in themselves. *"Ideo alii dicunt quod cum omnes formae, secundum Philosophum (de Generi Animal, lib. 2, cap. 3), de potentia materiae educantur, oportet ipsas formas praeexistere in materia incomplete, secundum quandam quasi inchoationem; et quia non sunt in esse suo perfectae, non habent perfectam virtutem agendi, sed incompletam; . . . Has ergo virtutes incompletas in materia praeexistentes, rationes seminales dicunt, quia sunt secundum esse completum in materia, sicut virtus formativa in semine."*[29] But this explanation does not satisfy Thomas either, for immediately he adds: *"Hoc autem verum non videtur,"* and he gives as his reason: *"quia quamvis formae educantur de potentia materiae, illa tamen potentia materiae non est activa sed passiva."*[30] According to this theory the *rationes seminales* are only the incomplete forms which may be derived from the potentiality of matter. We may illustrate it thus: Clay has within itself the possibility of being formed into a statue, a flower pot, a ball, a brick, etc. The forms of these various things may be derived from the potentiality of the clay. However, the clay was entirely passive, it was suitable to receive these forms; there was an *habilitas* or *inchoatio formae,* as St. Thomas says. So they said in the beginning matter alone existed but there was in matter the potentiality of all the beings that exist in the world today. The forms of these beings existed potentially in matter and these potential forms were the *rationes seminales* of Augustine.

St. Thomas insists that under the term *rationes seminales* are included both active and passive powers. *"Ad quartum dicendum, quod sub rationibus seminalibus comprehenduntur tam virtutes activae quam etiam passivae, . . ."*[31] When it is said that they were put in matter, it is not to be understood as pure matter, *materia prima,* which has only passive potentiality; they are said to be in matter as complete forms are said to be in matter. *"Ad secundum dicendum, quod rationes seminales dicuntur*

[29] Ibid.
[30] Ibid.
[31] l. c. ad 4um.

materiae inditae, non quia sint intelligendae praeexistere in materia ante adventum formae completae, quasi pertinentes ad essentiam materiae, vel ad rationem ejus, secundum quod est materia, sed per modum quo etiam formae completae in materia esse dicuntur."[32] In fact the *rationes seminales* are strictly applied to active powers only and it is by analogy that they are extended to the passive ones. In every natural change there are two elements, the active and the passive, the *movens* and the *motum.* Thus in generation, he says, the male element is the active one and the female element is passive[33] and therefore only the male element can be properly called *semen,* but by a certain extension of the term, the female element, *menstruum,* is also called a *semen,* even though it is passive. In the same manner we extend the name *rationes seminales* to include both the active and the passive powers in nature.[34] This is the third opinion mentioned by St. Thomas and the one that he accepts.

The question of the active powers of the *rationes seminales* is one that deserves further consideration. In spite of the clear words of St. Thomas there are writers today who deny that the *rationes seminales* as understood by St. Augustine possessed any active powers. In the discussion carried on in the pages of the Irish Ecclesiastical Record between Fathers Phillip Burton, C.M., and Patrick F. Coakley, O.S.A., the former made this statement: "It is clear from this and many other passages that, in the first creation, his (Augustine's) *rationes causales* are not material entities, but reside in matter as mere modes; as *modorum rationes;* as *formabilitas;* as *potentia* in a passive sense, as *rationes incorporaliter corporeis rebus intextae;* as *causa,* but only like a material or a pattern. He gives them no activity, no power to pass from the first creation to the second except by the immediate action of the creator."[35] He repeats this statement a little later in the same article. Quite recently Father Woods has published a defense of

[33] This was an opinion, commonly held in the Middle Ages.
[32] l. c. ad 2um.
[34] "——; *sicut et in generatione animal is semen extento nomine dicitur non solum sperma, sed etiam menstruum."* l. c. ad 4um.
[35] Irish Ecc. Rec. 4-S, Vol. V, p. 105.

the same interpretation. He writes: "The only active potency in the earth as such was that of the elementary forms, quite inadequate to the production of the varied life of the vegetative and sensitive creature. Indeed, this was so obvious that, though St. Augustine recognizes the existence of such forms, since prime matter could not exist uninformed, he nevertheless ignores them in discussing the seminal reasons as the term of the first creation, putting these, as we see, in prime matter as a pure passive potency."[36] And in the following chapter he says: "In themselves the seminal reasons, regarding primordial origins, natural generation, miracles indifferently, are but passive determinations of passive potency to be actuated according to the requirements of each."[37] In the same paragraph he calls them "positive determinants of passive potency." What he seems to say is that the *rationes seminales* did nothing more than to reduce the universal indifferent potentiality of matter to a positive definite potentiality to receive the particular form determined by God. He expressly denies that they are active forces.[38]

We have seen that Father Burton's statement that the *rationes seminales* are not separate entities is correct. His references to a first and second creation will be discussed in the next chapter where Augustine's theory of creation is investigated. The opinion maintained both by Father Burton and by Father Woods that the *rationes seminales* were purely passive must be considered here. The quotation from the Angelic Doctor giving his answer to those who held the passive theory in his day has already been cited. We will go now directly to the pages of St. Augustine and see whether this theory can be substantiated. The evidence is easily found and it is wholly against the purely passive interpretation.

In the third book on the Trinity, Augustine devotes a chapter to an explanation of the manner in which magicians performed their magic arts. In accordance with the scientists of his day, he believed that these magicians were

[36] Henry Woods, S.J.: *Augustine and Evolution*, p. 57.

[37] l. c., p. 67.

[38] On pages 46 and 47, he gives a summary of his opinions.

able to bring forth frogs and serpents from inanimate matter. His purpose is to show that these men were no more the creators of these things than the farmer is of the corn which he raises on his land. Both make use of the natural powers which God implanted in nature at the beginning. Just as there is in the seed, in the ground and in the sun and rain, the powers necessary to produce the crop of corn, so too there is in nature the occult reasons which made it possible for the magicians to produce their results. *"Omnium quippe rerum quae corporaliter visibiliterque nascuntur, occulta quaedam semina in istis corporeis mundi hujus elementis latent."*[39] Now God has permitted that these powers and elements should obey the wicked as well as the good. *"Nam et damnatis iniquis etiam in metallo servit aqua et ignis et terra, ut faciant quod volunt, sed quantum sinitur."*[40] Lest it be doubted that these forces in the elements of the earth are the same as the *rationes seminales* in which all things existed potentially in the beginning, we have the explicit statement of Augustine that it was because of this force existing in the elements that plants and animals came forth from the land and the water without the ordinary process of generation. *"Alia sunt enim haec jam conspicua oculis nostris ex fructibus et animantibus, alia vero illa occulta istorum seminum semina, unde jubente Creatore produxit aqua prima natatilia et volatilia, terra autem prima sui generis germina, et prima sui generis animalia."*[41] Even if we cannot see these hidden seeds in the elements our reason forces us to believe that they are there, otherwise we could not explain how these things came without generation. *"Iam vero hujus etiam grani semen quamvis oculis videre nequeamus ratione tamen conjicere possumus: quia nisi talis aliqua vis esset in istis elementis, non plerumque nascerentur ex terra quae ibi seminata non essent; nec animalia tam multa nulla marium feminarumque commixtione praecedente, sive in terra sive in aqua, quae tamen crescunt et coeundo alia pariunt, cum illa nullis coeuntibus parentibus orta sint."*[42]

[39] *De Trinitate,* Lib. III, c. VIII.
[40] Ibid.
[41] Ibid.
[42] Ibid.

Woods gives clearly the import of these and other statements in the same chapter: "Here, then, St. Augustine seems to assert an active potency of seminal reasons, not only as they are contained in plants, seeds and other visible agencies, but also inasmuch as they are hidden in the elements of the earth. These seminal reasons are of the same kind as those which were terminated in the first animals by creation. They are those which were left over from the work of creation, and need only a due temperance of things to burst into existence. They produce from the earth what is not sown. They are the origin of animals, which, existing without antecedent sexual union, nevertheless by sexual union reproduce their kind. They are a force, the seed of seeds, even the seed itself of those animals which do not by sexual union conceive the seed of their young."[43] The author attempts to discredit this apparent meaning first by the *apriori* argument: "In the supposition, then, of some contradiction between the two, *De Trinitate* should be interpreted by the teaching of *De Genesi ad Litteram,* rather than the reverse," because in the latter the "seminal reasons are discussed formally and exhaustively" while in the former "they enter to be touched upon but briefly and incidentally."[44] Since, according to his interpretation, in the latter the *rationes seminales* are merely passive, he concludes that a similar meaning must be attributed to them here. This he proceeds to do by maintaining that in the production of plants and animals, whether in the first instance or later through the instrumentality of the Angels, good or bad, the active principle is the Divine Word. "The active principle of production is the Divine Word, the ministry of angels is instrumental only, commanded if they are good, permitted if they are bad. They collect the matter determined by seminal reasons to this particular effect at this determined time. They mix it in suitable proportions, they provide the suitable temperature, as do the generating agents in ordinary generation. But God works the effect in the extraordinary way. The active potency of the seminal reason is absent:

[43] *Augustine and Evolution,* p. 103.
[44] l. c., p. 101.

the passive potency only of determined matter is there."[45] He substantiates this opinion partly at least by Augustine's use of the word "created" in the passage from which the above quotations are taken.[46] We shall see later that Augustine several times uses the word in a broad sense to mean natural development of the *rationes seminales* from potency to act.[47] It is in that sense that he uses it here.

The statement of Father Woods that the interpretation of the *De Trinitate* must not contradict that of the *De Genesi ad Litteram* can be accepted as true. Regardless of their relative importance it would be absurd to hold that Augustine presents contradictory views regarding the *rationes seminales* in the two works. We can accept the literal meaning which, as Father Woods admits, the words of the *De Trinitate* seem to convey and show that it is in perfect agreement with the teaching in the *De Genesi ad Litteram*. In the ninth book of the latter work, the author is considering the origin of the first woman and in doing so he repeats his general theory regarding the origin of all things, thus: *"Omnis iste naturae usitatissimus cursus habet quasdam naturales leges suas, secundum quas et spiritus vitae, qui creatura est, habet quosdam appetitus suos determinatos quodammodo, quos etiam mala voluntas non possit excedere. Et elementa mundi hujus corporei habent definitam vim qualitatemque suam, quid de quo fieri possit vel non possit. Ex his velut primordiis rerum, omnia quae gignuntur, suo quoque tempore exortus processusque sumunt, finesque et decessiones sui cujusque generis."*[48] This passage directly confirms the opinion that Augustine attributes active powers to the *rationes seminales* and agrees perfectly with the literal meaning of the quotations from the *De Trinitate*. Here again he says there are certain powers in the elements from which all things are to develop according to natural laws. That this usual development is the effect of the *rationes seminales* is clear from a statement which immediately follows in which Augustine explains certain miracles by saying that God has

[45] l. c., p. 115.
[46] l. c., p. 105.
[47] Cfr. p. 64.
[48] *De Gen ad Lit.*, Lib. IX, c. XVII.

it in His power to produce effects other than those called for by the *rationes seminales. "Super hunc autem motum cursumque rerum naturalem, potestas Creatoris habet apud se posse de his omnibus facere aliud, quam eorum quasi seminales rationes habent, . . ."*[49]

Woods says that the production of the first plants and animals from the *rationes seminales* was due to the direct intervention of God, the extraordinary way, whereas it seems quite clear from the words just quoted that the development of these seminal reasons is the ordinary way and only when God wishes to produce other effects does He directly intervene in the extraordinary way, as for instance when He makes a dry stick bloom and bring forth fruit or when a woman sterile in her youth brings forth a child in her old age. In these cases the *rationes seminales* were passive; they possessed the possibility of receiving these effects but the active force necessary to produce them was only in God. In the ordinary cases St. Augustine definitely places the active powers in the *rationes seminales* as created by God at the beginning.

The commentators, with the exceptions mentioned above, concur in this interpretation of St. Augustine. We have already given one quotation from St. Thomas (n. 31) in which he explicitly attributes active and passive powers to the *rationes seminales.* Similar statements can be found in the *Summa,*[50] and in the *De Potentia* he indicates the result of these powers by such expressions as *"—tunc terrae datam esse virtutem germinativam ad producendum plantas opere propagationis;—"*[51] *"—plantae tunc fuerunt productae non in actu, sed secundum rationes causales tantum, quia data fuit virtus terrae producendi illas—."*[52] More of these might easily be given but these indicate the mind of the doctor so clearly that others are unnecessary.

Suarez understood Augustine in the same way. In quoting the proofs used by St. Augustine to support his theory, he says: *"Secundo confirmari potest, quia verbum illud 'germinet terra' optime exponitur potestative, ut sic dicam,*

[49] Ibid.
[50] *Summa,* I, q. CXV, a. 2.
[51] *De Pot.* q. IV, a. 2, ad 28um.
[52] Ibid.

id est, accipiat terra vim germinandi."[53] To this assertion he responds thus: "*—tamen ex verbis adjunctis manifeste constare Deum non tantum dedisse terrae virtutem germinandi, sed etiam illam statim germinare fecisse, vel ipsum virtute sua herbam et plantas in ea produxisse.*"[54] He admits that in the beginning God gave to the earth the power of germinating plants, but whereas Augustine held that this power was bestowed *potentialiter,* he contends that God produced in the earth the plants and animals, endowed with the power of reproducing themselves.

With the exception of Fathers Burton and Woods, mentioned above, all modern interpreters agree in attributing active powers to the *rationes seminales.* St. George Mivart in his scholarly work, *The Genesis of Species,* says: "Now St. Augustine insists in a very remarkable manner on the merely derivative sense in which God's creation of organic forms is to be understood; that is, that God created them by conferring on the material world the power to evolve them under suitable conditions."[55] Father Coakley is even more explicit: "As the first terms of the different series of created beings were not created in the enjoyment of their maximum of protection, but in germs, '*quasi in grano,*' these germs must not be looked at as 'destitute, both of internal and external reaction,'[56] unless we are to predicate similar mortality of that with which they are compared, the embryo of the tree, a perfect center of vital forces."[57] The Rev. P. M. Northcote has this clear comment on Augustine, *De Trinit.* III, 16: "From this quotation it may be clearly seen that St. Augustine holds that when God created the material universe, He placed in it active energies, which are the secondary causes under himself, the First Cause, for the production of all things that come into existence."[58]

One of the best treatments of the theory of *rationes seminales* is that by Edouard Thamiry, Dean of the Faculty of Theology, of the University of Lille, France, in his

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[53] *Tract. de Opere Sex Dierum,* Lib. II, c. I.
[54] l. c., c. IV.
[55] Mivart: *The Genesis of Species,* p. 281.
[56] This is quoted from Father Burton's article in the same volume.
[57] Irish Ecc. Rec. 4-S, Vol. V, p. 351.
[58] Rev. P. M. Northcote: *The Idea of Development,* p. 29.

recent work, entitled "De L'Influence." He is very clear in his interpretation of Augustine. After showing how the Fathers adapted the Stoic theory of seminal powers he adds: "C'est sous cet aspect qu'à travers les livres de Plotin et de ses disciples, Saint Augustin envisage d'abord le problème. Seulement il distingue nettement les raisons idéales et causales, qui sont dans le Verbe divin, d'avec les raisons séminales, qui résident dans la matière et sont des puissance passives et actives d'où decoulent les effets naturales des êtres."[59] The author makes two statements here: first, that Augustine clearly distinguished between the ideal reasons in the mind of God and their counterpart, the seminal reasons in matter; second, that these were the powers both active and passive from which natural effects were to flow. The *rationes seminales* existed in matter and were the powers which resulted in the natural activity of beings. One more authority must be quoted. Canon Dorlodot, director of the Geological Institute at Louvain University, commenting on Augustine, *De Gen. ad Lit.*, Lib. IV, c. XXXIII, *"Alioquin si rerum naturales—oriri et perfici possunt,"* says: "In this passage, St. Augustine clearly denies that the subjects containing the *rationes causales* were, according to his hypothesis, created *ova* or seeds. It was rather inorganic matter, and in the particular case of the birds the 'humid element'—i. e., water. Evidently, also, the powers referred to are active ones, since they are identified with the powers of development situated in an *ovum.*"[60]

Summing up the evidence for and against what I might call the activity theory of the *rationes seminales*, it seems clear that the arguments are overwhelmingly in favor of the theory. It is difficult to understand how any other interpretation can be given to the words of Augustine himself. Then the clear words of St. Thomas, supported by Suarez and a long line of modern writers, from Mivart to Dorlodot, put the question beyond a doubt. Those who defended the passive interpretation did so because of some false notions, e. g., the early Scholastics, by their theory of the generic forms, and Duns Scotus by his failure to deter-

[59] Edouard Thamiary: *De l'Influence*, p. 202.
[60] Dorlodot: *Darwinism and Catholic Thought*, p. 83.

mine properly the nature of secondary instruments or causes. In our time, Fathers Burton and Woods have been led by their antagonism to evolution. Augustine undoubtedly attributed active powers to the *rationes seminales.*

4. The Manner in Which Future Beings Are Contained in the *Rationes Seminales*

The statement by Dorlodot, quoted above (n. 60), sums up accurately the present stage of our investigation into the nature of the *rationes seminales.* Two facts have been ascertained: 1, that the subject containing the *rationes seminales* is inorganic matter and not created *ova,* cells or seeds; and 2, that the powers referred to are both active and passive. There are two other questions that must be answered before this phase of our study can be said to be complete. The first is: how were these *rationes seminales* contained in the inorganic matter; and the second, were they determined exactly for each being that was later to appear or were they more or less general and the particular form of their development left to external circumstances? The answers to these questions, especially the latter, assume great importance in view of their bearing on the question of evolution. The nature of these answers will go a long way in determining whether the proponents of the evolutionary hypothesis are justified in appealing to the authority of St. Augustine to confirm their theory, as has so often been done.

In attempting a solution of the difficulties proposed, it must be recalled that the age of Augustine was not one of scientific investigation and that Augustine himself was not a scientist but a theologian. As he tells us himself, his desire was to know God and himself: *"Deum et animam scire cupio."*[61] Nevertheless he did not condemn a knowledge of the theories of the pagan philosophers and of the natural facts as evil, as did some of his contemporaries, but he values them only in so far as they help him to achieve his purpose. He accepted the current scientific theories of his time provided they were not irreconcilable with the

[61] *Soliloquia,* I, 2.

teachings of the Scriptures. Two of these are important for our present study, that the material world was composed of four elements—earth, air, fire and water—and that lower animals were generated spontaneously from inorganic matter and from decaying flesh. Both of these are rejected today but they were accepted as facts by the most learned men from the time of the ancient Greek Physicists until comparatively recent times. In the *De Gen. ad Lit.* he clearly indicates his belief in the theory of the four elements. He expends some effort in proving that the Scripture though not expressly mentioning the element air nevertheless does imply its existence. He also shows how the five senses can be referred to the four elements. *"Ideo autem caloris privatione, cum corpus nimie frigescit obtundi sensum, quia notus pigrescit, qui ex calore inest corpori dum ignis aerem, et aer humida, et humor terrena quaeque afficit, subtilioribus scilicet crassiora penetrantibus."*[62] He is equally explicit in regard to spontaneous generation: *"Nam pleraque eorum aut de vivorum corporum vitiis, vel purgamentis vel exhalationibus aut cadaverum tabe gignuntur; quaedam etiam de corruptione lignorum et herbarum, quaedam de corruptionibus fructuum."*[63] It is in the light of these two theories that we must seek an answer to the questions proposed.

Augustine knew nothing of the chemical elements familiar to scientists at present; he did not have our atomic and molecular theories to assist him; electricity, steam and explosives were as yet unknown quantities. It would be absurd, therefore, to expect to find in Augustine an explanation of natural phenomena, couched in modern scientific terminology or exactness. Of this much we are already certain, that in Augustine's opinion the *rationes seminales* were real active powers contained somehow in the primitive elements. Now were these powers distributed equally in the four elements or were they confined to certain ones only? Again were the powers in one element capable of acting independently of those in the other elements or was cooperation or interaction necessary? These are the questions that we must ask Augustine to answer.

[62] *De Gen. ad Lit.*, Lib. III, c. IV.
[63] l. c., Lib. III, c. XIV.

In regard to the first there is no dispute. Augustine very definitely puts the *rationes seminales* in only two of the elements, namely, earth and water. More than that, he specifies which beings had their origin in the one and which in the other. In the following passage he outlines the order of creation through the six days *"non intervallis temporum,"* as he says, *"sed connexione causarum."*[64] He assigns the work of the third, fifth, and sixth days thus: *"Tertio, species maris et terrae, atque in terra potentialiter, ut ita dicam, natura herbarum atque lignorum. Sic enim terra ad Dei verbum ea produxit, antequam exorta essent, accipiens omnes numeros eorum quos per tempora exsereret secundum suum genus. . . . Quinto, aquarum natura, . . . produxit ad Dei verbum indigenas suas omnia scilicet natatilia et volatilia; et haec potentialiter in numeros, qui per congruos temporum motus exsererentur. Sexto, terrestria similiter animalia, tamquam ex ultimo elemento mundi ultima; nihilominus potentialiter quorum numeros tempus postea visibiliter explicaret."*[65] No attempt will be made here to explain Augustine's use of the days, or his theory with regard to the appearance of things. The passage is quoted merely to show his opinion that all living beings were contained potentially either in the water or in the earth; the flying and swimming things in the former; plants, trees and animals in the latter. Later in the same book he explains that his doctrine about the simultaneity of creation pertains not only to the inorganic world, *"sed etiam illa quae aqua et terra produxit potentialiter atque causaliter."*[66] Many other similar statements can be found in Augustine's works. In them all he states explicitly that all living things are to come forth either from the earth or the water and this of course is because of the *rationes seminales* placed in them at the beginning.

The second question proposed was whether these powers were able to act independently or whether the cooperation of an external agent was necessary. If the external agent was necessary, was this agent purely natural or an inter-

[64] l. c., Lib. V, c. V.
[65] l. c., c. XXLII.
[66] l. c., Lib. V, c. XXIII.

vention of God? We have seen that Father Burton and Father Woods held that divine intervention was required. Still Augustine's answer to this question seems to the writer to be quite clear and definite. These seminal powers do not act independently but are dependent upon external natural conditions. When I say natural conditions, I do not mean that Augustine denied the necessity of divine providence. Again and again he states that not only the activity but the very existence of all things is impossible without divine support. His doctrine on this subject will be discussed in the succeeding chapter. All that is meant here is that no special act or interference of God is required to induce the seminal powers to act. Neither does this theory of the necessity of a cooperating agent militate in any way against the doctrine that the seminal powers are active. Hydrogen and oxygen certainly have within themselves the active power to unite and form water. Still this chemical change will not take place unless these elements are subjected to a certain degree of heat. Nor can it be said that the heat there causes the change for it might be applied to any other substances without effecting such results. The heat is necessary but only to assist the active powers already contained in the elements. So too with the *rationes seminales,* the extrinsic conditions are necessary but only to induce the activity, not to determine its direction.

The principal evidence for Augustine's stand on this question is taken from the same chapter of the *De Trinitate* as quoted above (nn. 44-47) to prove the activity of the seminal reasons. The general theme is the miracles and he is attempting to distinguish true miracles from false. Among the latter he numbers the deeds of the magicians, and he explains at some length how the magical arts are practiced. It is in this explanation that his principles of natural causes are indicated. His argument may be briefly stated thus: The elements of the earth have definite powers which in the ordinary course of events follow certain laws. The evil spirits having a more intimate knowledge of these powers and their laws can use them to produce results which are beyond our possibilities. These evil spirits, there-

fore, are not to be considered the creators of things nor miracle workers since they are but making use of natural agents. He presents the argument in several ways; for instance: *"Nec ideo putandum est istis transgressoribus angelis ad nutum servire hanc visibilium rerum materiam, sed Deo potius, a quo haec potestas datur, quantum in sublimi et spirituali sede incommutabilis judicat. Nam et damnatis iniquis etiam in metallo servit aqua et ignis et terra, ut faciant inde quod volunt, sed quantum sinitur. Nec sane creatores illi mali angeli dicendi sunt, quia per illos magi resistentes famulo Dei ranas et serpentes fecerunt: non enim ipsi eas creaverunt. Omnium quippe rerum quaedam semina in istis corporeis mundi hujus elementis latent."*[67] There is here a manipulation of the forces placed in matter by God, to produce effects existing potentially therein, just as the chemist mixes his elements in certain quantities and under certain conditions to bring about desired results. Both produce their results by artificially fixing the conditions necessary for the latent forces to act.

There is another passage in the same chapter which is even more convincing. *"Invisibilium enim seminum creator, ipse creator est omnium rerum: quoniam quaecumque nascendo ad oculos nostros exeunt, ex occultis seminibus accipiunt progrediendi promordia, et incrementa debitae magnitudinis distinctionesque formarum ab originalibus tanquam regulis sumunt. Sicut ergo nec parentes dicimus creatores hominum, nec agricolas creatores frugum, quamvis eorum extrinsecus adhibitis motibus ista creandi Dei virtus interius operetur: ita non solum malos, sed nec bonos Angelos fas est putare creatores, si pro subtilitate sui sensus et corporis, semina rerum istarum nobis occultiora noverunt et ea per congruas temperationes elementorum latenter spargunt, atque ita gignendarum rerum et accelerandorum incrementorum praebent occasiones."*[68] Notice that the source of all things are the invisible seminal powers; their development is according to *"originalibus regulis"* or natural laws. Moreover, all artificial cultivation is made pos-

[67] *De Trinit.*, Lib. III, c. VIII.
[68] Ibid.

sible only through these powers and laws and by controlling the conditions under which these laws operate, their development can be regulated. This seems to me clear proof of Augustine's conviction that the *rationes seminales* depend for their development upon natural causes.

However, since this point is so important and there are other passages so directly covering the issue, I think it well to give them here. Contrasting original creation with later development, he says: *"Aliud est enim ex intimo ac summo causarum cardine condere atque administrare creaturam, quod qui facit, solus creator est Deus: aliud autem pro distributis ab illo viribus et facultatibus aliquam operationem forinsecus admoveret tunc vel tunc, sic vel sic exeat quod creatur. Ista quippe originaliter ac promordialiter in quadam textura elementorum cuncta jam creata sunt; sed acceptis opportunitatibus prodeunt."*[69] God created these powers and distributed them in the elements at the beginning and when the right opportunity presents itself they come forth. But he goes even further and says that the conditions necessary to induce the hidden causes to come forth may be arranged artificially: *"Adhibentes autem forinsecus accedentes causas, quae tametsi non sunt naturales, tamen secundum naturam adhibentur, ut ea quae secreto naturae sint abdita continentur, erumpant et foris creentur quodam modo explicando mensuras et numeros et pondera sua, quae in occulto acceperunt ab illo qui omnia in mensura et numero et pondere disposuit."*[70] The word *"creentur"* is clearly used in the wider sense referred to above (n. 47), meaning the unfolding of the measures, numbers and weights of the hidden causes.

Thomas Aquinas certainly understood the *rationes seminales* to be secondary causes acting according to natural laws and producing their effects by mutual interaction. Treating of the necessity of the *opus distinctionis* he says: *"Natura in operibus sex dierum taliter instituta est, ut naturae principia tunc condita in se subsisterent, et quod ex eis alia propagari possent per mutuam actionem et passionem; et ideo oportuit eis tunc esse, conferri et virtutes*

[69] l. c., c. IX.
[70] Ibid.

activas et passivas, quas Augustinus vocat rationes seminales quibus ex eis effectus, consequentes producerentur."[71] These principles of nature having existence in themselves are such that other things are to develop from them through their mutual reactions.

It has been established that the *rationes seminales* are definite active and passive powers inherent in earth and water; that these powers are stirred into action by the influence of external agents, which however are purely natural; that this process is carried out through laws which likewise are natural in as much as they proceed from the very nature of the elements. St. Augustine, with the limited scientific knowledge available in his day, could go no further in his explanation. Today scientific development makes it possible to peer more closely into the secrets of nature, and from the facts there observed we can understand even better than Augustine the nature of the *rationes seminales.*

Modern science reveals to us in many ways the fact that there is in all bodies an active principle. Resistance, substantial changes, chemical affinity, production of crystals, emission of rays, all are experimental proof of the existence of directive force inherent in substances. We might take anyone of these to illustrate the theory of *rationes seminales* but probably an example from chemical affinity will be most easily understood. For instance, sodium and chlorine have an affinity for each other which is evident by the readiness with which they unite to form the common compound salt. There is in these two elements not merely the possibility of becoming salt but a positive tendency, a determination, a predisposition to effect this result. This predisposition, common to both, establishes a certain proportion between them and gives them an *aptitudo ad similitudinem accipiendam.*[72] Consequently if these two are brought together there is an immediate and spontaneous movement resulting in a union of the two elements in a new substance with its own distinctive properties. Now

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[71] *In II Sent. Dist. XIII,* q. I, art. 1. For St. Thomas' distinction between the *opus creationis, opus distinctionis* and *opus ornatus* see the article just quoted and *Summa* I, q. LXVII, art I.

[72] Thamiry: *De Rationibus Seminalibus,* p. 83.

this propensity inclining the energies inherent in the atoms of these elements to a specific end and the capability of the subject matter of receiving this change is called the *ratio seminalis.*

It can be shown that this explanation agrees with the scholastic principles of matter and form. As noted above, the *rationes seminales* do not exist in matter without form, but only in a complete being composed of matter and form. *"Rationes seminales non sunt intelligendae praeexistere in materia ante adventum formae."*[73] They determine or individuate the specific powers of this complete being and constitute that *potentia materiae* from which new forms are educed. In every substantial change there is a change of forms, the old form being lost and a new form assumed. New forms are educed from matter in the manner in which they are potentially contained therein. St. Thomas says: *"Actum extrahi de potentia materiae nihil aliud est quam aliquid fieri in actu quod erat in potentia."*[74] The matter then, which is only passive, concurs in the production of new forms, in so far as it has an intrinsic aptitude to receive such a new form. But matter does not exist except in union with some form. Therefore in a concrete being there are active powers, bound up in the forms which likewise concur in the production of new forms. Thus in the example of chemical change given above, we had first the elements with their subject matter and the forms of sodium and chlorine respectively. In the second stage we had the subject matter of these two united with the new form of salt. Now in this change the subject matter of each element concurred in so far as it possessed an intrinstic aptitude to receive this form of salt. But the subject matter in the first condition did not exist alone, but in union with the forms of sodium and chlorine and therefore the active powers contained in these forms also concurred in the production of the new form of salt. Thus we see how the principles of matter and form afford a basis for the active and passive powers which constitute the *rationes seminales* and together with them an explanation of substantial

[73] *In II Sent.* Dist. XVIII, q. I, a. 2, ad 2um.
[74] *Sum.* I. q. XC, a. 2, ad 2um.

change. With the help of these principles and the illustration, we can understand better that the *rationes seminales* comprise the inherent aptitude residing in the potentiality of matter to sustain specified forms and the active powers intrinsic to the form united with this matter and likewise determined towards a particular end. Thus the first of the questions proposed on page 46 is answered.

The second of the two questions asked above, *viz.*, were the *rationes seminales* determined exactly for each being that was later to appear or were they more or less general and the particular form of their development left to external circumstances, remains to be answered. In the foregoing discussion reference was made to inorganic bodies only and their powers. Still we know that according to the theory of St. Augustine all living things were contained potentially in these *rationes seminales* or powers of corporate matter. The question here is whether just as the substance salt is contained specifically in the potentialities of sodium and chlorine, so the various living beings were so determined in the *rationes seminales.* The present purpose is only to determine the nature of the seminal powers and not their manner of development. Hence whatever the answer to the present question be, the discussion of the order of appearance of the various forms must be reserved for the next chapter. For even if there was a definite *ratio seminalis* for each thing that was later to appear, there would still be the possibility of this *ratio seminalis* developing immediately into its proper form or mediately through intervening forms.

A thorough examination of the various statements of Augustine, bearing on this point, makes it certain that it was his opinion that all the potentialities and causes of all things that were later to appear were fixed in the beginning not merely generically but specifically, in other words, that the *rationes seminales* were determined exactly for all future beings. We have seen that by the *rationes seminales* are meant the natural powers, resulting from the nature of original elements. Now when we say that they were fixed for all future beings, we do not mean that God had separated out small groups of these elements, each to

develop its own proper being. We mean that these powers were there in matter, capable of producing the various effects that we now see and that God had commanded, as it were, these powers to produce definitely these effects. We might illustrate our meaning by the example of a contractor who undertakes to build a house. He has on the ground where the building is to be erected all the material that is to be used in its construction. He obtains skilled workmen, gives them his plans and orders them to use this material in such a way that the desired house will result. With the same material he might have had any other of a number of different kinds of houses built; but having given this one plan to the workingmen, with orders to build accordingly, only that one definitely planned house will be erected. Now, *mutatis mutandis*, that is what happened in the beginning of the world. The material was there with its definite qualities; God, the divine contractor, had His plans very definitely in His mind from all eternity. But here there is a difference. Instead of giving these plans to artisans and ordering them to carry them out, He consigned these plans, by His almighty power, directly to the physical elements and put into them the necessity of working out by themselves the definite results which He desired. The *rationes seminales* thus become the permanent instruments of the Creator in the production of living things. Cajetan points out the distinction between a temporary instrument and a permanent instrument. The former is like a chisel in the production of a statue. It does nothing of itself but needs the immediate action of the artist to be effective. The latter is more like a clock which when started keeps on going without the intervention of the maker. This one shares permanently in the power derived from the agent; that one for a time only.[75] Both are nevertheless instruments, because as Dorlodot says: "Every created thing is by its very nature an instrument of God."[76] The seminal reasons, as we have seen, need not the immediate intervention of God, but work out their effects by power given to them in the beginning.

[75] Comment. on *Summa*, I, q. CXVIII, a. 1. See also Dorlodot: *Darwinism and Catholic Thought*, p. 119.
[76] Op. cit., p. 121.

There are many passages in which Augustine clearly indicates his belief that the various beings which later developed were determined definitely from the beginning. In the third book of the *De Genesi ad Lit.* he asks why the words *secundum genus* are said of certain creatures but not of man and after giving several possible solutions, he finally concludes thus: *"Potest enim nunc fortasse sufficere, propterea de homine non dictum esse, 'secundum genus,' quia unus fiebat, de quo etiam femina facta est. Non enim multa genera hominum sicut herbarum, lignorum, piscium, volatilium, serpentium, pecorum, bestiarum: ut sic diceretur generatim, ut inter se similia atque ad unam originem seminis pertinentia distingueretur a caeteris."*[77] Augustine here does not merely contrast the unity of man's origin with the multiplicity, shown by the different classes which he enumerates, but with the many varieties found in each of these classes, with the *multa genera herbarum, lignorum, etc.* He is plainly speaking of the work of the six days and says that at that time all these different species were definitely fixed. The word *genera* is not used in the technical sense which modern biologists have adopted, but simply to indicate classes.

Further evidence of this opinion is to be found in Book IV. The author is discussing whether all things were established at once or in the course of time: *"Numquid—simul omnia facta sunt? annon potius per intervalla temporum secundum praefinitos dies?"*. He concludes, as we know, in favor of the first alternative. *"Qua propter quam facilis ei efficacissimus motus est tam facile Deus condidit omnia; quoniam per illam (i. e., Sapientiam Dei) sunt condita."* Then he adds these significant words which seem to the writer to cover the point at issue: *"—ut hoc quod nunc videmus temporalibus intervallis ea moveri ad peragenda quae suo cuique generi competunt, ex illis insitis rationibus veniat, quas tanquam seminaliter sparsit Deus in ictu condendi."*[78] The Latin here is not easy, the *quod* clause being explanatory, not relative, and the meaning this: "So that the fact that we now see these things moving

[77] *De Gen. ad Lit.*, Lib. III, c. XII.
[78] *De Gen. ad Lit.*, Lib. IV, c. XXIII.

themselves—*moveri* is used reflexively—through intervals of time to develop that which is proper to each one's nature, comes from these implanted powers which, etc.—" There are two statements: 1, that things develop those characteristics which are proper to each one's own nature; 2, that this fact is due to the principles or seminal reasons which God put there in the beginning. That beings develop true to their own forms is due to the powers God gave them at the beginning.

Many other statements can be given which imply Augustine's belief in the original specification of the *rationes seminales.* A few of these will be given here with only a word of comment. In explaining the work of creation as manifested to us in the six days, he says that on the third day there was produced, *"natura herbarum atque lignorum —, accipiens omnes numeros eorum quos per tempora exsereret secundum suum genus";* and on the fifth day, *"omnia natatilia et volatilia; et haec potentialiter in numeris qui per congruos temporum motus exsererentur";* and on the sixth day, *"terrestria animalia—potentialiter, quorum numeros tempus postea visibiliter explicaret."*[79] The repetition of the word "numbers" is intended to emphasize the completeness of each day's creation with all its varieties. Later he explains what this completeness entails: *"consummata quidem quia nihil habent illa in naturis propriis, quibus suorum temporum cursus agunt, quod non in istis causaliter factum sit."*[80] Again he tells us that the elements have *"definitam vim qualitatemque suam"* determining the possibilities of each. From these *"primordiis rerum"* all things arising in time, *"processusque sumunt, finesque et decessiones sui cujusque generis."*[81] In view of all this evidence the question asked above, *viz.,* were the *rationes seminales* determined exactly for each being that was later to appear, must be answered in the affirmative. The creator's plans included the particular form of each being that was to come. He put into the primitive elements the power of producing future beings and the plans according to which these beings were to be produced.

[79] l. c., Lib. V, c. V.
[80] l. c., Lib. VI, c. XI.
[81] l. c., Lib. IX, c. XVII.

This brings to an end our discussion of the nature of the *rationes seminales.* We began with an inquiry into the use of the terms and found that they are called *rationes* because they are derived from the ideal reasons existing in the mind of the Creator, and *seminales* because these potentialities are wrapped up in the earth as the potentialities of the mature being are wrapped up in its seed. Our study next led us to the conclusion that the *rationes seminales* had physical existence but not as separate entities, as cells, *ova,* or seeds. We then learned from St. Thomas that there were three opinions in his day regarding the *rationes seminales.* According to the first, they were the generic forms, existing before and distinct from the specific forms. The second considered them to be the potentialities preexisting in prime matter prior to its union with forms. Both of these opinions Thomas rejects, the first because the distinction between the generic and specific forms is not real but mental, and the second because it makes the seminal reasons passive only whereas they are both active and passive. The third opinion is the one he accepts and the one that is defended in this work, *viz.,* the *rationes seminales* are the active and passive powers existing in corporal matter. Since this opinion has been questioned even in our day, greater attention was given to it and proofs alleged from St. Augustine, medieval and modern writers. We then explained that these powers remained latent until, stimulated by external natural conditions, their potentiality was reduced to act according to natural law. This activity of inherent powers was further illustrated by an example of chemical affinity, wherein it was shown how the active and passive powers were contained in the chemical elements of sodium and chlorine and the contribution of each in producing the form of salt. This explanation was considered in the light of the scholastic principles of matter and form and its agreement was noted. Finally it was brought out that the particular forms of all future living beings were definitely fixed in the *rationes seminales* from the beginning.

What then are the *rationes seminales?* At the beginning of this chapter we stated that no attempt would be made to define them until their nature had been definitely estab-

lished. Trusting that this has been accomplished, we look for a definition embodying our determinations and find one ready made in a work of St. Thomas. It is in the *Summa* where the Angelic Doctor discusses the action of bodies. He says: *"Et ideo Augustinus omnes virtutes activas et passivas, quae sunt principia generationum, et motuum naturalium, seminales rationes vocat."*[82]

This passage is translated by the Fathers of the English Dominican Province thus: "Therefore Augustine fittingly gave the name of seminal virtues (*seminales rationes*) to all those active and passive virtues which are the principles of natural generation and movement."[83] There is just one word in this translation that I would change. The "virtues" does not seem to me to convey the true meaning as well as the word "powers." Accordingly I would give this as a fitting definition of the *rationes seminales,* according to the concept of Augustine: "Those active and passive powers which are the principles of natural generation and movement."

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[82] *Summa,* I, q. CXV, art. 2.

[83] *The Summa of St. Thomas Aquinas,* Part I, third number, q. CXV. Article 2.

CHAPTER IV

THE RATIONES SEMINALES—THEIR ORIGIN AND DEVELOPMENT WITH SPECIAL REFERENCE TO MAN

1. Augustine's Conception of Creation

In this chapter it is our purpose to answer the questions left over from the preceding chapter. In general they are: 1. Whence did these *rationes seminales* come, and when did they enter into the elements; 2. what was the order and method of their development; and, 3. how do they explain the origin of man. It is, of course, St. Augustine's answer to these questions that we are seeking.

In regard to the origin of the *rationes seminales* it must be borne in mind that in answering this question Augustine is really giving his interpretation of the "days" of *Genesis.* As pointed out before, he had for his purpose the explanation of the Scriptures in a way that was consistent with the text and at the same time would merit the respectful consideration of the scientists of his day.[1] Augustine's answer to the question how did the *rationes seminales* come into existence is definite and indisputable. God created them. His belief in the creation of all things is so clear that it does not need proof here. But how did God create things? Did the act of creation extend over periods of time, or was it completed instantly? When this act was completed, what form did things have?

Augustine is answering this question, as the others, by the authority of the Sacred Text. His keen mind has noted that some things contained therein are to be taken literally, while others only figuratively. In the opening chapter of the *De Gen. ad Lit.* he says: *"In narratione ergo rerum factarum quaeritur utrum omnia secundum figuratum tantummodo intellectum accipiantur, an etiam secundum*

[1] *De Gen. ad Lit.*, Lib. I, c. XIX.

fidem rerum gestarum asserenda et defendenda sint. Nam non esse accipienda figuraliter, nullus Christianus dicere audebit."[2] With this in mind he seeks to determine whether we should give a figurative meaning to the "days," as used by the sacred writer. After pointing out the impossibility of accepting the literal translation, he proceeds to give us what he thinks is the correct meaning of the creation account. His explanation may be summed up as follows: 1. God created all things, inanimate and animate, organic and inorganic, at one moment by a single act of His will. 2. At the beginning some things existed actually with the form that they have today; others only potentially. In the former were the four elements, earth, air, fire and water, and the Angels; in the latter class were all living things that were later to appear upon the earth. 3. These living things were to develop from potentiality to act when the right conditions came about. We shall take each of these points in order.

The first point is that the act of creation did not extend over a period of time but was completed in its entirety in a single instant. In the fifth book of the *De Gen. ad Lit.* he sums up his conclusions regarding the work of creation thus: "*Sicut autem in ipso grano invisibiliter erant omnia simul quae per tempora in arborem surgerent, ita ipse mundus cogitandus est cum Deus simul omnia creavit, habuisse simul omnia quae in illo et cum illo facta sunt, quando factus est dies: non solum coelum cum sole et luna et sideribus, quorum species manet motu rotabili, et terram et abyssos, quae velut inconstantes motus patiuntur, atque inferius adjuncta partem alteram mundo conferant; sed etiam illa quae aqua et terra produxit potentialiter atque causaliter, priusquam per temporum moras ita exorirentur, quomodo nobis jam nota sunt in eis operibus, quae Deus usque nunc operator.*"[3] Here Augustine compares the earth to a seed, saying that just as everything which later develops in the tree was contained in the seed, so at the time when God made everything at once, the earth had everything which was made actually or potentially. There were

[2] l. c., c. I.

[3] *De Gen. ad Lit.*, Lib. X, c. XXXIII.

the heavens with the sun, moon and stars and the land and sea, but also those things which the land and sea produced in the course of time.

It is clear that Augustine meant to include everything: the celestial firmament, the land and sea and all things which came forth from them. All these were there at that moment when God created everything at once. In the next paragraph, going back to the text of Scripture, he explains that God did not act then as he does now, but *"illo modo quo creavit omnia simul, senarioque dierum numero consummavit, cum diem quem fecit, eis quae fecit, sexies praesentavit, non alternante spatio temporaliter, sed ordinata cognitione causaliter."*[4] All things were made at once but were presented to men as it were in six phases, not in intervals of time but in the order in which they were known causally. After that first act, there was nothing else created: *"Unde nullam ulterius creaturam instituens, sed ea quae omnia simul fecit, administratorio actu gubernans et movens."*[5] The divine Providence continued to watch and guide that which He had created at once.

The important point here is that in Augustine's system there is but one creation, that moment at the beginning of time when God created all things simultaneously. As mentioned before, Father Burton, C.M., refers to a first and second creation, while Father Woods, S.J., holds that according to Augustine, creation in God is one simple act of absolute simplicity; while in creatures it "consists formally in the creation of matter with its passive potency determined primarily and directly to those creatures which without antecedent seed were, in obedience to the creative word, to come into existence in their various kinds; while adequately it includes the successive appearances of each of its kind at its appointed time."[6] There are two phases, as it were, in the act of creation: the first is that by which matter with its seminal reasons came into existence, and the second, by which individuals of each species pass from potency to act. According to his interpretation the seminal

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[4] l. c., Lib. V, c. XXIII.

[5] Ibid.

[6] *Augustine and Evolution*, p. 45.

reasons are purely passive potencies which require the creative word of God to become act. The work of administration begins with the first individuals of each kind. Here too, he says, is Augustine's use of the plural *tempora* or times. It is because "each individual creature has its own individual time having its appointed place in the universal time of this coexisting order of creation."[7] The point at issue is precisely this: did Augustine extend the work of creation to include the transition of creatures from potentiality to actuality, from the seminal reasons to the living individuals. As implied in our previous discussion on the nature of the *rationes seminales,* our answer to this question is in the negative. The work of creation, from the viewpoint of creatures as well as that of God, was completed at that instant when God made everything simultaneously. The fulfillment of the seminal reasons in individuals was not the completion of the creative act but a natural development of the inherent powers in matter under the same administrative activity of God as that which sustains and supports all natural movement today.

In the fifth book of the *De Genesi ad Lit.,* Augustine is explaining *Genesis,* II, 5: "And every plant of the field, before it sprung up in the earth and every herb of the ground before it grew," and he points out that these were created causally in the earth or ground at the beginning when God made everything. *"Causaliter ergo tunc dictum est produxisse terram herbam et lignum, id est, producendi accepisse virtutem."*[8] Then considering the statement that God planted Paradise, he says quite explicitly that in doing so God did not add anything to creation but by His administration that which He had made before came to its perfection. *"Nam utique postea plantavit Deus paradisum juxta orientem, et ejecit ibi de terra omne lignum speciosum ad aspectum, et bonum ad escam* (Gen. II, 8, 9): *nec tamen dicendum est eum aliquid tunc addidisse creaturae, quod ante non fecerat, quod velut illi perfectioni, qua omnia bona valde sexto die consummavit, post esse addendum: sed quia jam omnes naturae fruticum atque lignorum in prima con-*

[7] l. c., p. 35.
[8] *De Gen. ad Lit.,* Lib. V, c. IV.

ditione factae fuerint, a qua conditione Deus requievit, movens deinde administransque per temporales cursus illa ipsa qua condidit, et a quibus conditis requievit, non solum tunc plantavit paradisum, sed etiam nunc omnia quae nascuntur."[9] Nothing is to be added after the first creation but thereafter the administration is to become effective through the course of time. Augustine is clearly referring here to the first appearance of trees in the garden of Paradise and says that this appearance is not a creation but a development under the administration of God while time was going on, *per temporales cursus.*

This administration is the same as God exercises today. *"—;sed etiam illa quae aqua et terra produxit potentialiter atque causaliter, priusquam per temporum moras ita exorirentur, quomodo nobis jam nota sunt in eis operibus, quae Deus usque nunc operatur."*[10] Again, speaking of God's rest on the seventh day, the says: *"Potest etiam intelligi Deum requievisse a condendis generibus creaturae, quia ultra jam non condidit aliqua genera nova: deinceps autem usque nunc et ultra operari eorumdem generum administrationem, quae tunc instituta sunt."*[11] It is only by doing violence to the text that one can make the act of creation extend to the actual appearance of the creature on earth and limit the work of administration by such appearance. A careful and unbiased reading of these texts must bring the conviction that Augustine held that it was by exactly the same providence whereby living things reproduce themselves today that they were able to come forth from the *rationes seminales* in the earth to their individual completeness. As the tree was potentially in the seed so all living things were potentially in the earth and the same divine cooperation which enables the tree to come forth from the seed, enabled all things to come forth from the earth.

Before leaving this subject, something must be said about Augustine's conception of time. We know that in his opinion, time began with creation and that no intervals of time elapsed during the creative act. But Woods says:

[9] Ibid.
[10] l. c., c. XXXIII.
[11] l. c., Lib. IV, c. XII.

"He (Augustine) saw the creature in its seminal reasons created in the roots of times; the creature tending to its existence in its own moment of time; the creature existing in its kind in the progressive course of time."[12] According to this author the creative act was not completed in the individual until its appearance on earth. He then explains that no time intervened in the creative act because for this individual time did not begin before this appearance. But we have seen that the words of St. Augustine do not allow an extension of the creative act until the individual's actual appearance and consequently this explanation of the time of each individual is likewise without foundation. He says time began with creatures. *"Factae itaque creaturae motibus coeperunt currere tempora; unde ante creaturam frustra tempora requiruntur, quasi possint inveniri tempora ante tempora."*[13] We are not to consider time as if it were not a creature, when it is really the movement of creatures. *"—cum sit creaturae motus ex alio in aliud."*[14] God's activity in the days of *Genesis* was not the same as it is now. Now He acts in time: from His actions then, time began. *"Quapropter cum primam conditionem creaturarum cogitamus, a quibus operibus suis Deus in septimo die requievit; nec illos dies sicut istos solares, nec ipsam operationem ita cogitare debemus, quemadmodum nunc aliquid Deus operatur in tempore: sed quemadmodum operatus est unde inciperent tempora, quemadmodum operatus est omnia simul."*[15] The *prima conditio rerum* is that which existed at the beginning when God created all things at once. After that He rested, i. e., there was no further creation. With that prime condition time(s) began. God has since administered in time the things then created. Woods lays stress on the use of the plural form, times, *"in radicibus . . . temporum,"*[16] but here Augustine uses the same form for the beginning of time at the first moment of creation, *"unde inciperent tempora,"* showing thereby that the use of the plural form has no special significance or at least that the

[12] Woods: *Augustine and Evolution*, p. 34.
[13] *De Gen. ad Lit.*, Lib. V, c. V.
[14] Ibid.
[15] Ibid.
[16] Woods: *Augustine and Evolution*, p. 34.

phrase "in the roots of times" may refer to that moment when all things were created simultaneously. Moreover Augustine says that the living things developed from that prime condition *"per temporales cursus"* (n. 9), *"per temporum moras"* (n. 10), which expressions can only indicate that time was going on for the things appearing. Augustine in using the plural form means merely periods of time, the intervals which elapsed between the creation of things potentially and their appearance on earth. It is the same mode of expression that Cicero uses when he says *"longis temporibus ante,"*[17] or *"id certis temporibus futurum."*[18] The Latin idiom requires the use of the plural form in some instances where the English uses the singular. The celebrated Latin scholar, Robert Ogilvie, gives such an example: *"Homeri incerta sunt tempora,"* which he translates: *"The time of Homer is uncertain."*[19] It would seem then that Augustine's use of the plural, "times," rather disproves Father Woods' theory than confirms it.

That St. Thomas understood the teachings of Augustine in this way is quite evident. It must be remembered that the question is whether the work of creation in the individual being can be extended to its actual appearance on earth. The Angelic Doctor in discussing the question: *"Utrum materiae formatio tota simul fuerit an successive,"*[20] makes this statement: *"Augustinus vult* (lib. V, super *Gen.*, Cap. XII et XIV) *in ipso creationis principio quasdam res per species suas distinctas, fuisse productas in natura propria. . . . . Alia vero dicuntur esse producta in rationibus seminalibus tantum, ut animalia, plantae et homines; quae omnia postmodum in naturis propriis producta sunt illo opere quo post senarium illorum dierum numerum Deus naturam prius conditam administrat."*[21] Here Thomas is clearly interpreting Augustine; he is referring to the moment of creation, and he says distinctly that at that moment some things were created in their proper forms, others in the *rationes seminales;* that the latter were

[17] *Cic. Reb.* 2, 34, 5.
[18] l. c. 1, 15, 23.
[19] Ogilvie-Souter: *Horae Latinae*, p. 281.
[20] *De Pot.*, q. IV, a. 2.
[21] l. c. ad 22um.

to be produced in their proper forms through the administration of God. That administration began with the completion of the work of the six days and included therefore the development of the *rationes seminales* from potency to act. In the same article he says expressly that the work of the six days was completed in an instant: *"Nam omnia opera sex dierum in eodem instanti temporis simul sunt facta vel in actu vel in potentia."*[22] He gives no hint of a first and second creation or of a formal and adequate creation. For him there was the simultaneous creation of all things and then the administration of all things in time. In his *Commentary on the Sentences,* he compares this opinion of St. Augustine with that of some of the other Fathers, and evaluates them thus: *"Haec quidem positio (Gregorii, et al.) est communior, et magis consona videtur litterae quantum ad superficiem; sed prior est rationabilior et magis ab irrisione infidelium sacram Scripturam defendens . . . et haec opinio plus mihi placet."*[23] Neither opinion is of faith and to Aquinas that of St. Augustine is more acceptable than the other.[24]

Albertus Magnus, the teacher of St. Thomas, likewise notices this difference of opinion.[25] He explains Augustine's opinion thus: *"Quod Augustinus super Genesim pluribus modis nititur ostendere, dicens elementa quatuor ita formata sicut modo apparent ab initio exstitisse, et coelum sideribus ornatum fuisse. . . Quaenam vero non formaliter, sed materialiter tunc facta fuisse, quae post per temporis accessum formaliter distincta sunt: ut herbae, arbores, et forte animalia. Omnia ergo in ipso temporis initio facta esse dicunt: sed quaedam formaliter et secundum species quas habere cernimus, ut majores mundi partes: quaedam vero materialiter tantum."*[26] The teacher and the pupil are in agreement in their interpretation of their common master. All things were created at once; but trees, herbs and even animals became formally distinct only

[22] Ibid.
[23] *In Lib. II Sent.* Dist. XII, q. 1, a. 2.
[24] In the *Summa,* I, q. LXXIV, art. 2, Thomas attempts to show that as regards the production of things, there is not much difference between the two opinions.
[25] *In Lib. II Sent.* Dist. XV, a. 6.
[26] Ibid.

after a lapse of time. Augustine's use of the plural "times" elicited no comment from either of them.

Suarez, likewise, speaks about the simultaneous theory of creation but makes no limits or divisions in the effect upon creatures. He says: *"D. Augustinus in hac sententia fuisse videtur ut totus hic mundus, ut coelis, elementis, et mixtis constat, simul in principio fuerit creatus: et consequenter quod aqua, terra ceteraque elementa in ea dispositione facta fuerint quae ad usum, generationem et conservationem mixtorum necessaria sunt. . . . De locis autem elementorum et de dispositione mundi, prout nunc est sine dubio sensit in primo instanti ita fuisse creatum."*[27] Later, in discussing why St. Augustine held that plants were produced potentially, he adds: *"Nam Augustinus in eam sententiam inductus est, quia omnia istorum dierum opera in eodem puncto creationis simul credidit fuisse facta."*[28] Here again we have creation occurring in an instant without reference to a further possible explanation of the term.

Modern authors have arrayed themselves on both sides of the question. We have seen Father Burton's interpretation of a first and second creation; also Father Woods' extension of the act of creation to the moment of the appearance of the individual being. Both of these interpretations are without foundation. Of those who support the theory of absolute simultaneous creation, only the most important will be mentioned here. The biologist, Father Erich Wasmann, S.J., says: "Even to St. Augustine it seemed a more exalted conception and one more in keeping with the omnipotence and wisdom of an infinite Creator, to believe that God created matter by one act of creation, and then allowed the whole universe to develop automatically by means of the laws which He imposed upon the nature of matter."[29] Professor Thamiry explains Augustine's theory of creation thus: "Cette evolution s'accomplit sous l'impulsion initiale de la cause première, qui a commis aux raisons séminales, à titre de causes secondes, le soin de de conserver et de perfectionner le cosmos. . . . Dieu, en

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[27] *Tract. de Opere Sex Dierum,* Lib. I, c. X, 4.

[28] l. c., Lib. II, c. VII, 2.

[29] Wasmann: *Modern Biology and the Theory of Evolution,* p. 274.

effet, a tout créé par un seul acte de sa puissance infinie.[30] Dorlodot points out that St. Augustine differs from some contemporary schools of thought in his doctrine of creation and that he distinguishes between creation and the later appearance of things on earth. "On this point St. Augustine was in agreement with the Fathers of the School of Alexandria, and he was also at one with them on maintaining that the Six Days of Genesis represented simply the very beginning of time, that is to say, the mathematical instant when God created matter from nothing. But while the Alexandrine Fathers held that from that moment the organic as well as the inorganic worlds were essentially the same as they are today, St. Augustine abandoned this opinion in the case of the organic world, and held that at the beginning of things God created living beings only in their causes . . and it was only as time went on that the different organized beings, including the human body, appeared, or to use his own expression, 'came forth from their causes' by a natural evolution of inorganic matter."[31] Creation occurred at the absolute beginning of time; organized beings appeared later in time. Charles Boyer, in seeking to explain Augustine's idea of truth, has this concerning creative truth: "Depuis le repos du septieme jour, il ne se produit donc rien de nouveau. Cette affirmation est importante dans la cosmologie augustinienne."[32] "Soutenués, continués et mués par Dieu les virtualités créés au commencement produisent au cours des siècles l'histoire entière du monde."[33]

These statements from contemporary authors, confirmed by the authority of Albertus Magnus, St. Thomas and Suarez, all serve to strengthen the conclusions we drew from the words of St. Augustine himself and which may be summed up thus: 1. All things were created; 2. The act of creation was completed in a mathematical instant; 3. At the moment of creation some things came into being *"in propria natura,"* while others, including plants, animals and even man, existed only in their causes.

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[30] Edouard Thamiry: *De l'Influence*, p. 203; crf. also *De Rationibus Seminalibus*, p. 75 seq., by the same author.
[31] Dorlodot: *Darwinism and Catholic Thought*, pp. 141, 142.
[32] Charles Boyer: *L'Idée de Vérité*, p. 127.
[33] l. c., p. 132.

2. The Development of the *Rationes Seminales*

We must now turn our attention to the second point proposed above (p. 60), namely, the nature of that development under which the *rationes seminales* passed from potency to act. We have already touched upon this question in the discussion regarding the activity of the *rationes seminales* and the nature of the creative act. We have seen that according to Fathers Burton and Woods, the seminal reasons were passive, having no powers within themselves to develop into their proper forms. The first appearance of plants, animals and man was immediate creation; subsequent generation is mediate creation. In the former God acts directly; in the latter He uses secondary causes. Between the former and miracles there is no distinction as far as the action of God is concerned. "To God, then, it is equally according to nature to create directly, to create indirectly by generation, or to produce miraculously. All three depend on His almighty power, not upon nature or natural forces, which of themselves are as unequal to the task of producing wine through the long process of assimilation, growth, maturity, fermentation, as to the taking of the miraculous short cut of Cana or to the producing of the first vine from the earth."[34] "In themselves the seminal reasons, regarding primordial origins, natural generation, miracles indifferently, are but passive determinations of passive potency to be actuated according to the requirements of each. In two modes, therefore, are seminal reasons brought to existence, immediately, without any antecedent process of generation, and mediately, the effects of that process. To the first mode belong the creation of the first individuals of the species and the miracle. . . . We must not omit to note that, as regards the natural process of production by generation, St. Augustine does not exclude the lower agencies that have in it their instrumental place. He takes them for granted and then passes them by as having no formal efficiency in the generating of the effect."[35] Father Burton says simply: "St. Augustine does not attribute any activity to his *rationes causales;* they can pass

[34] Woods: *Augustine and Evolution,* p. 66.
[35] l. c., pp. 67, 68.

from the first creation to the second only by the immediate action of the Creator."[36]

Contrary to all these statements, it is evident that Augustine did attribute active powers to the *rationes seminales* which enables them to develop into actuality, under the immediate influence of external natural conditions. From the standpoint of God's activity there is no distinction between the development of the first individuals of each species and the generation of those that followed. It is true that natural forces are but instrumental causes in the production of living beings, but a distinction must be made between permanent instrumental causes and temporary ones. Father Woods fails to make this distinction. All natural generation and movement from that first instant when all things were created simultaneously, has been carried out under the administrative activity of God. Obviously the solution of this difficulty lies in finding out the exact nature of this administrative activity.

St. Augustine gives a clear explanation of the difference between creative activity and that of administration in the *De Genesi.* He is showing how to reconcile the statement that God rested on the seventh day and that saying of Christ: "My Father worketh until now and I work."[37] He explains that the work which God finished in the sixth day and from which He rested on the seventh, was the work of creation, but the work which He does now is supporting and administering all that He established then. *"Proinde et quod Dominus ait, 'Pater meus usque nunc operatur,' continuationem quandam operis ejus, qua universam creataram continet atque administrat, ostendit."*[38]

Without this support no creature could move or even exist: *"Unde colligitur quod si hoc opus suum rebus subtraxerit, nec vivemus, nec movebimur, nec erimus."*[39] All natural development depends upon this same support. *"Claret igitur ne uno quidem die cessare Deum ab opere regendi quae creavit, ne motus suos naturales quibus aguntur atque vegetantur, ut omnino naturae sint, ut in eo*

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[36] Irish Ecc. Record, 4-S, vol. V, p. 107.
[37] *John*, V, 17.
[38] *De Gen. ad Lit.*, Lib. IV, c. XII.
[39] Ibid.

quod sunt pro suo quaeque genere maneant, illico amitterent, et esse aliquid omnino desinerent, si eis subtraheretur motus ille Sapientiae Dei, quo disponit omnia suaviter. Quapropter sic accipimus Deum requievisse ab omnibus operibus suis quae fixit, ut novam naturam ulterius nullam conderet; non ut ea quae condiderat, continere et gubernare cessaret."[40] Neither can it be said that Augustine refers here only to the creatures which have existence. He is explaining the distinction between the work of the six days, and His subsequent activity, for he immediately adds: *"Unde et illud verum est, quod in septimo die requievit Deus; et illud, quod usque nunc operatur."*[41] The six days represent the mathematical moment when time began; what follows is administration.

But Augustine seems to have realized that there would be some who would doubt his interpretation, for in the following book he says emphatically: *"Sed illud etiam atque etiam consideremus utrum possit nobis per omnia constare sententia qua dicebamus, aliter operatum Deum omnes creaturas prima conditione, a quibus operibus in die septimo requievit, aliter istam earum administrationem, qua usque nunc operatur: id est, tunc omnia simul sine ullis temporalium morarum intervallis; nunc autem per temporum moras, quibus videmus sidera moveri ab ortu ad occasum, coelum mutari ab aestate ad hiemem, germina certis dierum momentis pullulare, grandescere, virescere, arescere. Animalia quoque statutis temporum metis et cursibus et concipi, et perfici, nasci, et per aetates usque in senium mortemque decurrere, et catera hujusmodi temporalia."*[42] The movements of the stars, the change of seasons, the development of plants and animals, all these belong to God's administration. It is true that Augustine does not expressly mention the *rationes seminales* and their development here, but from the statements quoted above (p. 61) to show his notion of creation, there can be no doubt that he means to include this development under administration. Moreover it is implied in the quotation just given by the words *prima conditione.*

[40] Ibid.
[41] Ibid.
[42] l. c., Lib. V, c. XI.

Still one might object that since under the divine administration is included all the activity of God from the moment of creation, it must include miracles also. But true miracles imply a direct intervention of God. Therefore the development of the *rationes seminales* even though it is effected under God's administration, might nevertheless be due to a direct intervention of God. We grant the force of this argument but happily Augustine has told us explicitly what he means by miracles and contrary to the opinion of Father Woods, it is clear that he does not mean to put the first appearance of plants and animals in the same class as miracles. I have purposely not included man because as we shall see later Augustine thought it probable that man's origin was miraculous.

In explaining the providence which God exercises over creatures, Augustine makes a distinction between natural providence and voluntary providence. The first is that secret administration of God which manifests itself in spontaneous natural movement, while the second is that which He accomplishes through the work of man or the Angels. *"Hinc jam in ipsum mundum, velut in quandam magnam arborem rerum, oculus cogitationis attollitur; atque in ipso quoque gemina operatione providentiae reperitur, partim naturalis, partim voluntaria. Naturalis quidem per occultam Dei administrationem, qua etiam lignis et herbis dat incrementum; voluntaria vero, per Angelorum opera et homium. Secundam illam primam coelestia superius ordinari, inferiusque terrestria; luminaria sideraque fulgere, diei noctisque vices agitari, aquis terram fundatam interlui atque circumlui, aerem altius superfundi, arbusta et animalia concipi et nasci, crescere et senescere, occidere et quidquid aliud in rebus interiore naturalique motu geritur. In hac autem altera signa dari, doceri et disci, agros coli, societates administrari, artes exerceri, et quaeque alia sive in superna societate aguntur, sive in hac terrena atque mortali, ita ut bonis consulatur et per nescientes malos."*[43] Note that in neither case is there a direct intervention of God. In both natural forces are being used in an ordinary way. In the former they operate spon-

[43] *De Gen. ad Lit.*, Lib. VIII, c. IX.

taneously; in the latter, they are controlled by the free will that God has given to Angels and men. However, both man and the Angels can use them to produce only those effects which are in accordance with the laws and possibilities placed in them by God, at the beginning, and in so far as God permits. Such effects are not miraculous. God, it is true, is the efficient cause of these effects but the natural forces or *rationes seminales* are permanent instrumental causes and when the effects are produced through them in the ordinary way, Augustine says clearly, they are not miracles.[44]

But God may produce natural effects in an extraordinary way or effects that go beyond the active powers of matter and then we have miracles. As an example of the first, he gives the changing of water immediately into wine at Cana. It is natural for water to be changed into wine. The ordinary way, however, is for the moisture to be absorbed out of the ground, sent up through the stock and branches and finally into the fruit. It is then picked, pressed, the juice is allowed to ferment and at last strengthened by age, it becomes good to drink. This process is not miraculous. But when God eliminates the intervening stages and changes water directly into wine, that is the extraordinary way, and it is called a miracle.[45] As an example of the second kind of effect he gives the fact that a dead dry rod should bloom and bring forth fruit (*Num.* XVII, 8). The active causes existing in the rod were not sufficient to produce this effect and only a cause hidden within God himself could account for it. However, there was in the rod the passive potentiality to receive this effect. *"Super hunc autem motum cursumque rerum naturalem, potestas Creatoris habet apud se de his omnibus facere aliud, quam eorum quasi seminales rationes habent, non tamen id quod non in eis posuit ut de his fieri vel ab ipso possit."*[46] But Father Woods says (n. 34) that the production of the first individuals of each species was of the same nature as the miracle. He does not include this development under the divine administration but calls it adequate creation. He explains, however, that God's activity in this case is the

[44] *De Trinit.*, Lib. III, c. V.
[45] *De Gen. ad Lit.*, Lib. VI, c. XIII.
[46] l. c., Lib. IX, c. XVII.

same as that which He exercises in the performance of miracles. This view is not supported by the texts from Augustine's works. From these texts we have shown, first, that he puts the appearance of the first plants and animals under the divine administration and not under creation;[47] secondly, that he puts the hidden causes of these plants and animals definitely into matter from the beginning;[48] thirdly, that these causes were both active and passive;[49] fourthly, that they developed into being according to natural laws and therefore in the ordinary way.[50] It is not necessary to repeat these arguments here; instead we can directly draw the conclusion that the appearance of the first plants and animals was due to that divine providence which Augustine calls natural.

St. Thomas confirms this interpretation of the administration of God and its function in the appearance of the first plants and animals. In answer to an objection raised against the theory of simultaneous creation, he makes a distinction between the *opus creationis* and the *opus administrationis*. *"Confirmatur etiam hoc ratione; quia in illis primis diebus condidit Deus creaturam causaliter vel originaliter vel actualiter opere a quo postmodum requievit qui tandem postmodum secundum administrationem rerum conditarum per opus propagationis usque modo operatur. Producere autem plantas in actu ex terra, ad opus propagationis pertinet; ideo non fuerunt plantae tertia die productae in actu, sed causaliter tantum; post sex vero dies fuerunt in actu secundum proprias species et in propria natura per opus administrationis productae; et ita antequam causaliter plantae essent productae nihil fuit productum, sed simul cum coelo et terra productae sunt; similiter pisces, aves et animalia in illis sex diebus causaliter, et non actualiter producta sunt."*[51]

This clear statement allows of but one interpretation. Plants were produced in two ways: *causaliter*, simultaneously with the heavens and the earth; and *in actu*, through

[47] P. 62.
[48] P. 32.
[49] P. 35.
[50] P. 70.
[51] *De Pot.*, q. IV, art. 2, ad 28um.

propagation. The former is the work of creation, the latter of administration. This propagation does not refer to the reproduction of plants after the appearance of the first plants, propagation from seed, but to the first individuals of the species, propagation from the earth. For he says distinctly: *"producere autem plantas in actu ex terra, ad opus propagationis pertinet."* The causes of these, placed in the earth, *originaliter,* were brought out through the action of the sun, *virtus coelestis,* acting upon the earth, in which they were contained. In a similar manner were fishes, birds and animals produced. In regard to miracles Thomas says that there are some that go beyond the active powers of creatures but not beyond their passive powers except those passive powers which are intended to receive the particular forms latent in the active powers. *"Similiter etiam neque praeter virtutes passivas creaturae inditas: ut ex ea fieri possit quidquid Deus mandaverit: sed praeter virtutes activas naturales, et potentias passivas quae ordinantur ad hujusmodi virtutes activas, dicuntur fieri miracula, dum dicitur, quod fiunt praeter rationes seminales."*[52]

Thamiry points out that Martin is wrong when he claims that God put into nature the immediate principle of miracles. *"Falso ergo rationum seminalium conceptum interpretatur J. Martin, qui sic absolute scribit:* 'Dieu a placé dans la nature le principe de tout ce qui arrive. Il a donc mis au fond des choses le principe du phénomène naturel, et un second principe que est celui du miracle, c'est ce que S. Augustin appelle: *'seminales rationes,'* Cit. a Revue Cath., Aout 1903."[53] The *rationes seminales* are indeed the principles of natural phenomenon, but not of the miraculous. Boyer, too, holds that the development of the *rationes seminales* was according to the ordinary way and confirms our interpretation of the miracles. "De meme, au premier matin du monde, les causes de toute son évolution résidaient en lui. Les unes déterminaient par avance quelle nature devrait surgir, et de quelle manière; elles précontenaient le cours ordinaire et naturel des choses, celui qui se deroule quand les etres soutenus par Dieu, déploient leurs puis-

[52] *Sum.* I, q. CXV, art. 2, ad 4um.

[53] Thamiry: *De Rationibus Seminalibus,* p. 90, n. 3.

sances propres. Ainsi les êtres se reproduisent et se succèdent. Les autres impliquaient uniquement la possibilité de certains èvénements, sans exclure, par elles seules, la possibilité des èvénements contraires, Dieu se reservant d'intervenir, au moment voulu, pour diriger le développement dans le sans qu'il a éternellement choisi: les èvénements qui arrivent de la sorte permis par les lois du monde mais déterminés par une action spéciale de Dieu, ce sont les miracles. Ainsi, Sara, stérile dans sa jeunesse enfanta dans sa vieillesse."[54] In the first class mentioned by Boyer God has put into the natural forces the necessity of working out their results according to the laws which govern them; in the second he has put there the possibility of producing the same effects but has retained within himself the determination to produce other results by direct intervention. These latter are miracles. The evidence presented is sufficient to show Augustine's conception of divine administration and of miracles and to prove that the appearance of the first plants and animals was included under the ordinary natural administration.

3. The Time and Order of the Appearance of Original Forms

We have studied thus far the origin of the *rationes seminales,* the manner of their existence at the beginning and the nature of their development. The point which must next be considered is the order that obtained in this development. We know that according to Augustine there was a definite *ratio seminalis* for each form that was later to appear, but in this process of development did the *ratio seminalis* pass directly into its appointed form or did it come up through intermediate forms? Again if these potencies developed immediately into their proper forms, did they appear on earth in any particular order, for instance, the more simple things and then the more complicated, or *vice versa?* It is easy to see what an importance the answer to these questions has in the discussion on St. Augustine and Evolution.

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[54] Boyer: *L'Idée de Vérité,* p. 129.

The texts already noted to show the condition of things at the beginning of the world enable us to state definitely that Augustine did not have in mind any series of developments which were eventually to make the world fit for living things. He says in his explanation of the order represented by Moses in Genesis that the earth was first *"terra informis"*[55] but that this unformed matter preceded the formed in origin but not in time. At the moment of creation the world existed in its proper form as we see it today. Dorlodot says: "Augustine holds that from the first moment of creation, the inorganic world was substantially the same as it is today."[56] Since this statement is not disputed, it will not be necessary to discuss it further. Another point may be accepted here without detailed discussion, that is, that Augustine does not specify the time that intervened between the creation of things casually at the beginning and their appearance in their proper forms later. Their causes were hidden in the elements and in the course of time they were to come forth. He repeatedly uses such expressions as *temporalibus intervallis, in numeros temporum, per temporum moras, per ordinem temporum, per volumina temporum explicandorum,* and others. As said before, things were to develop from potentiality to act when the conditions were favorable but no hint is given as to the length of time necessary. *"Acceptis opportunitatibus, prodeunt,"* says St. Augustine; that is all.

But the question regarding the manner of their appearance is more important than that of time. We have seen that the cause of each form that was later to appear was definitely contained in the *rationes seminales.* Things did not come forth immediately in their proper forms nor have those forms undergone any change through subsequent generations. Again we must remember that Augustine was a theologian and a philosopher, not a natural scientist. He accepted the scientific notions of his day. For him there was no more evidence of a transformation of species than there is to the untrained observer today. The presumption is then that Augustine believed that things ap-

[55] *De Gen. ad Lit.*, Lib. I, c. XV.

[56] Canon Dorlodot: *Darwinism and Catholic Thought*, p. 82.

peared with the same forms they had in his day and that those forms were constant. I think that a careful study of the text will bear out this presumption. In commenting on the phrase, "according to their kinds," as used in the first chapter of Genesis, Augustine asks why this expression is used regarding all other living beings but not of man and he answers his own question that it is probable that it was so used because whereas there was but one man created, there were many kinds of animals: *"Potest enim nunc fortasse sufficere, propterea de homine non dictum esse 'secundum genus,' quia unus fiebat, de quo etiam femina facta est. Non enim multa genera hominum, sicut herbarum, lignorum, piscium, volatilium, serpentium, pecorum, bestiarum: ut sic dictum accipiamus 'secundum genus' ac si diceretur generatim, ut inter se similia atque ad unum originem seminis pertinentia distingueretur a caeteris."*[57] By the various classes mentioned Augustine evidently meant to include all living things except man. All these were included in the original creation, not actually but casually. The individuals in each species were to be like each other and all in that species were to be traced back to one original seed. In a previous question, he suggests even more clearly that this is the meaning of *"secundum genus": "An quia haec ita exorta sunt ut ex eis alia nascerentur, et originis formam successione servarent et ideo dicuntur 'secundum genus,' propter propagationem prolis, qua permansura creabantur?"*[58] He puts this in the form of a question but since the statement given above is his answer it evidently is his opinion on the matter. The original form is to be preserved through successive generations.

There are several other statements which confirm this conclusion. In that summary of his doctrine of natural development in the ninth book he writes thus: *"Ex his velut primordiis rerum, omnia quae gignuntur, suo quoque tempore exortus processusque sumunt, finesque et decessiones sui cujusque generis. Unde fit ut de grano tritici non nascatur faba, vel de faba triticum, vel de pecore homo, vel de homine pecus."*[59] Of course, when he says that a bean will

[57] *De Gen. ad Lit.*, Lib. III, c. XII.
[58] Ibid.
[59] *De Gen. ad Lit.*, Lib. IX, c. XVII.

not come from a grain of wheat, nor man from an animal, he did not have transformation in mind but simply states that nature generates consistently. However, with what goes before it, I think he implies that the species were constant. Another argument can be drawn from his comparison of the origin of man with that of other living beings in the 12th Book of his City of God. He points out again that while man came from one individual, other beings began from many. *"Nam cum animantes alias solitarias, et quodammodo solivagas, id est, quae solitudinem magis appetant, sicuti sunt aquilae, mulvi, leones, lupi, et quaecumque sunt; alias congreges instituerit quae congregatae atque in gregibus malint vivere, ut sunt columbi, sturmi, cervi, damulae, et caetera hujusmodi: utrumque tamen genus non ex singulis propagavit, sed plura simul jussit existere. Hominem vero—unum ac singulum creavit."*[60] The word *"genus"* is not used in a technical sense, but in general, for a class or a division. Here the two *genera* are those animals which live alone and those which live in herds. In both of these classes, he says, there were many original forms. He does not say exactly how many or that the same forms existed in his own day but it seems to me that the whole tenor of the text indicates that that was his opinion. These different texts give us sufficient reason to conclude that Augustine believed that things came into being with all the variety that they had in his day. He thought this was the teaching of Scripture and he had no grounds to believe that it conflicted in any way with the scientific teaching of his time. Whether or not his general teaching regarding the *rationes seminales* can be fitted into a theory of transformism, we shall see in the next chapter.

Accepting then as proved the statement that there is no transformism in the theory of St. Augustine regarding the development of plants and animals, we may still ask if there is any evidence of the order in which things were to appear. Attention is called again to the fact that Augustine is interpreting Scripture. His answer, therefore, will be that which he finds in the sacred text. In the narration of the work of the six days in *Genesis,* Augustine noted that

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[60] *De Civitate Dei,* Lib. XII, c. XXI.

on the fifth day, God commanded the waters to "bring forth the creeping creatures having life and the fowl that may fly over the earth"; and on the sixth day He commanded the earth to "bring forth the living creature in its kind, cattle and creeping things, and the beasts of the earth." From this Augustine drew two conclusions: 1. Flying and swimming things came from the water, while plants and animals came from the land; 2. Those beings that came from water preceded those from the land. *"Oportebat,"* he writes, *"itaque ut in creandis habitatoribus inferioris hujus mundi partis, quae saepe terra nomine tota commemoratur, prius producerentur ex aquis animalia, postea vero de terra."*[61] However, he is speaking here of creation and consequently the order referred to is one of origin, not of time. *"Non intervallis temporum sed connexione causarum."*[62] The order of the appearance in time is not indicated in Scripture, and therefore not by Augustine. He does not deny that there is a progression in this appearance, he simply does not discuss it. We may argue that since almost all animals depend for their nourishment upon lower forms of life, that it was necessary for the lower and simpler forms to come first. Augustine, however, does not make use of such an argument.

When we turn to St. Thomas we find that while he expressed a preference for Augustine's theory of simultaneous creation rather than that of successive creation, in treating of the production of plants and animals he quotes the two interpretations without indicating which he prefers. He points out that according to some expositors, plants and animals were produced actually on the day indicated in *Genesis,* while according to St. Augustine, they were produced only potentially and developed actually through subsequent periods under the divine administration. *"Ante ergo quam orirentur super terram, factae sunt causaliter in terra. Confirmatur autem hoc etiam ratione: quia in illis primis diebus condidit Deus creaturam originaliter, vel causaliter: a quo opere postmodum requievit, opus propagationis usque modo operatur: producere autem*

[61] *De Trinit.* III, c. IX.
[62] *De Gen. ad Lit.,* Lib. V, c. V.

plantas ex terra ad opus propagationis pertinet."[63] The species came forth perfected from the ground. *"Unde signanter Scriptura dicit: 'Germinet terra herbam virentem, et facientem semen,' quia scilicet sunt productae perfectae species plantarum, ex quibus semina aliarum orirentur."*[64] He takes the constancy of species for granted because he writes that even if, as some say, the species began during the six days of creation, still the fact that they generate constantly is due to divine administration: *"Quod ex speciebus primo institutis generatio similium in specie procedat, hoc jam pertinet ad rerum administrationem."*[65] However, he admits the possibility of new species appearing, even as an offspring from preexisting species, and points out that in such a case the new species preexisted in certain active powers. *"Species etiam novae, si quae apparent, praeextiterunt in quibusdam activis virtutibus."*[66] The word *"species"* is evidently not used in the technical sense in which biologists use it today. He gives two examples of what he calls new species, the one is the spontaneous generation of a new species from decaying matter through powers contained in the sun and in the elements, the other is the generation of a mule from an ass and a horse. Neither of these constitutes a new species in the modern scientific sense.

In regard to the order St. Thomas discusses at length creation which is contained in the narration of the six days,[67] but I can find nothing directly concerning the order in which things created potentially appeared actually on earth. In the explanation of the days, he says that things were created according to their dignity, viz., first, the spiritual; second, the celestial;[68] third, the terrestrial or lower bodies. Among the latter he enumerates air, earth and water. Of these air and water were superior to the earth, and therefore they were adorned (*ornantur*) with their own proper objects, before the earth which is the lowest form.[69] Then among living things, he puts plants

[63] *Summa*, I, q. LXIX, art. 2.
[64] Ibid.
[65] Ibid.
[66] l. c. q. LXXIII, art. 1, ad 3um.
[67] *De Pot.* q. IV, art. 2, ad 29um.
[68] The word "celestial" here refers to the firmament above.
[69] In addition to ref. 64, above, confer also *Sum.* I, q. LXXI.

as the lowest, then in the ascending order, birds, fishes, land animals and finally man. It must be remembered that this is a relationship based on nature, not on origin in time.[70]

There is one statement which may shed some light on his opinion regarding the appearance of things. In treating of the work of the fifth day, an objection is made that since land animals are more perfect than birds and fishes, in as much as there is a greater distinction in the members of the former and they beget animals, whereas the others lay eggs, they should have been produced before the birds and fishes. Thomas answers this objection by saying that the order of production of these animals was based upon the dignity of the elements that produced them rather than on their own proper worth. However, he adds, in generation the order does proceed from the less perfect to the more perfect. *"Ad quintum dicendum, quod productio horum animalium ordinatur secundum ordinem corporum, quae eis ornantur, magis quam secundum propriam dignitatem: et tamen in via generationis ab imperfectioribus ad perfectiora pervenitur."*[71] Still it seems probable that generation in individuals is meant here rather than the development of different classes of animals.

Modern writers are much divided on the question of transformism in St. Augustine. Thamiry, after a thorough scientific study, comes to the conclusion that there is no transformism in the theory of the *rationes seminales. "Attamen genuina nostra explicandi ratio, licet de transformatione loquatur, uti supra innuimus, neque subito neque tardo transformismo favet, sed tantum specificas energias a creatore tali cellulae inditas ad actum promoveri docet."*[72] And Boyer says no less definitely: "L'hypothèse transformiste ne pouvait se presenter a l'esprit d'Augustin."[73] Father Woods, of course, asserts that each individual came forth with its own form, from the *ratio seminalis,* and that that form has remained unchanged,[74] and Father

[70] Ibid.
[71] *Sum.* I, q. LXXI, art. 1, ad 5um.
[72] Thamiry: *De Rationibus Seminalibus,* p. 107.
[73] Boyer: *L'Idée de Vérité,* p. 132.
[74] Woods: *Augustine and Evolution,* p. 79.

Burton does likewise.[75] On the other hand, Northcote boldly defends the possibility of attributing transformism to Augustine. "It is possible, therefore, to conceive, according to St. Augustine's interpretation of *Genesis,* that a single form of plant life, a single form of reptile and bird life, and a single form of terrestrial animal life were first created, each containing the *'rationes seminales'* of all subsequent variations which branched off from these few forms. We might even extend this still further and reduce all subsequent forms of life to one single primordial form."[76] Dr. Zahm, too, seems convinced that Augustine believed that things would develop by a gradual evolution from the simple to the complex. In his *Evolution and Dogma,* he says: "God then, according to St. Augustine, created matter directly and immediately. On this primordial or elementary matter He impressed certain causal reasons, *rationes causales;* that is, He gave it certain powers and imposed on it certain laws, in virtue of which it evolved into all the myriad forms which we now behold. The saint does not tell us by what laws or processes the Creator acted. He makes no attempt to determine what are the factors of organic development. He limits himself to a general statement of the fact of evolution, of progress from the simple to the complex, from the simple to the heterogeneous, from the simple primordial elements to the countless, varied, complicated structures of animated nature."[77] We shall have more to say about these statements in the next chapter; here it is sufficient to recall that Augustine does hold that the organic world has developed to its present condition through the influence of natural causes and laws, but his words are wholly against a theory of gradual development through intermediate forms; moreover that whereas we might conclude from his theories that it was necessary for the simpler forms to come forth first, he himself does not explicitly say so. Northcote's statement is contrary to the text of St. Augustine and Zahm is attributing to Augustine himself a conclusion which may be drawn from the saint's principles.[78]

[75] Irish Ecc. Rec. 4-S, vol. V, p. 108.
[76] Northcote: *The Idea of Development,* p. 82.
[77] Zahm: *Evolution and Dogma,* p. 283.
[78] This conclusion is limited to a gradual appearance of things.

4. The Origin and Appearance of Man

Augustine attacks the important question of the origin of man with great caution. He realized the difficulties attached thereto because of the distinct nature of man, differing essentially from all the lower animals and because of the special scriptural account of the formation of Adam from the slime of the earth, and the taking of the first woman from his side while he was asleep. His first question is whether the first man came into being in the form which we now observe, at the beginning when God made all things simultaneously or whether he was created causally then and appeared actually only in the course of time. Is the story of man's origin to be taken literally or can we say that man like all other living things was created potentially at that moment of time represented by the six days?

Consistently with his general interpretation, he accepts the second alternative. It is beyond doubt, he says, that man did not appear actually at the beginning but only in the course of time. *"Non est dubium hoc quod homo de limo terrae finctus est eique formata uxor ex letere, jam non ad conditionem qua simul omnia facta sunt, pertinere, quibus perfectis requievit Deus; sed ad eam operationem, quae fit jam per volumina saeculorum, qua usque nunc operatur."*[79] In the sentence following this he says that the very narration of the events which took place in the garden of Paradise indicates that these events belong not to the creative activity of God but to that administration which was carried on in time. *"Huc accedit quod ipsa etiam verba quibus narratur quomodo Deus paradisum plantaverit, in eoque hominem quem fecerat collocarit, ad eumque adduxerit animalia, quibus nomina imponeret, in quibus cum adjutorium simile illi non fuisset inventum, tunc ei mulierem costa ejus detracta formaverit, satis nos admonent haec non ad illam operationem Dei pertinere, unde requievit in die septimo, sed ad istam potius, que per temporum cursus usque nunc operatur."*[80] This then is certain, that, according to St. Augustine, man did not come into actual being at the beginning of the world but at a subsequent period.

[79] *De Gen. ad Lit.*, Lib. VI, c. III.
[80] Ibid.

Neither can it be said, writes the saint, that Adam was created at the beginning and Eve at a later period, for both were created potentially at the beginning and both came forth later in time. *"Aliter ergo tunc ambo, et nunc aliter ambo; tunc scilicet secundum potentiam per verbum Dei tanquam seminaltier mundo inditam, cum creavit omnia simul, . . . ; nunc autem secundum operationem praebendam temporibus, qua usque nunc operatur, et oportebat jam tempore suo fieri Adam de limo terrae, ejusque mulierem ex viri latere."*[81]

Augustine then attempts to answer the question, how did man exist in that primitive condition prior to his appearance on earth? He first states emphatically that it was not as a living being or even as a seed, but invisibly potentially, causally: *"Sed rursus, si dixero non ita fuisse hominem in illa prima rerum conditione, qua creavit Deus omnia simul, sicut est non tantum perfectae aetatis homo sed ne infans quidem, nec tantum infans sed ne puerperium quidem in utero matris, nec tantum hoc, sed nec semen quidem visibile hominis; putabit omnimo non fuisse."*[82] Nevertheless, he assures his reader, Scripture will tell us that man was created, male and female, from the beginning. *"Tunc autem factus est homo et masculus et femina: ergo et tunc et postea. Neque enim tunc, et non postea; aut vero postea, et non tunc: nec alii postea, sed iidem ipsi aliter tunc, aliter postea. Quaeret ex me, quomodo? Respondebo, postea visibiliter, sicut species humanae constitutionis nota nobis est; non tamen parentibus generantibus, sed ille de limo, illa de costa ejus. Quaeret, tunc quomodo? Respondebo, invisibiliter, potentialiter, causaliter, quomodo fiunt futura non facta."*[83] The causal reasons of man, both male and female, were placed in matter at the beginning. They did not have separate individual existence, nevertheless they were there. As Wasmann says, "By means of *primordiales causae* the body of man, like that of every other living creature, was based on *rationes seminales.* The holy doctor does not decide how far the *causae primoridales* and *seminales rationes* effected the preparation of its material."[84]

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[81] l. c., Lib. VI, c. V.
[82] l. c., Lib. VI, c. VI.
[83] Ibid.
[84] Wasmann: *Modern Biology*, p. 438.

The question of the origin of man's soul was more difficult. Was it created at that moment when God made all things at once, or only at the moment it was breathed into man's body? Augustine did not fully convince himself on this point. He preferred the opinion that the soul was created at the first moment of time and remained hidden until in the course of time it was united to the body, made out of the slime of the earth. *"Credatur ergo si nulla Scripturarum auctoritas seu veritatis ratio contradicit, hominem ita factum sexto die, ut corporis quidem humani ratio causalis in elementis mundi; anima vero jam ipsa crearetur, sicut primitus conditus est dies, et creata lateret in operibus Dei, donec eam quo tempore sufflando, hoc est inspirando, formato ex limo corpori insereret."*[85] That this theory was beset with difficulty, he candidly acknowledges, nevertheless it seemed to him the most plausible.

Augustine also remained somewhat doubtful regarding the form of man's body at the time of its appearance and the determination of that form. He dismisses the suggestion that God formed the body of man with corporal hands as too childish to be entertained or attributed to Scripture. Who, he says, is so stupid as not to know that the Scriptural words implying corporal action refer merely to God's power? But did Adam come into being in the full vigor of his manhood or as an infant in the mother's womb? In answering this question, he explains that the creator of all things is independent of time; that just as He changed water into wine, eliminating the long intervals in which the natural process takes place, so He might make man exist full grown, without passing through the usual periods of development. In fact the development of all the causal reasons took place just as the Creator wished.

As pointed out before, the design of the Creator might be fulfilled in either of two ways. First, it might be embodied with the *rationes seminales* in the very texture of the earth; secondly, the possibility of the form might be contained there and the determination of the form retained in the will of God. Thus in the *ratio seminalis* of man, there might have been only the passive possibility of receiv-

[85] *De Gen. ad Lit.*, Lib. VII, c. XXIV.

ing the form of man and the active power and determination to develop this form, or only the possibility was there and the active cause retained hidden in God. In either case the will of God would have inevitably been carried out. *"Si ergo in illis primis rerum causis, quas mundi primitus Creator inseruit, non tantum posuit quod de limo formaturus erat hominem, sed etiam quemadmodum formaturus, utrum sicut in matris utero an in forma juvenili; procul dubio sic fecit, ut illic praefixerat; neque enim contra dispostionem suam faceret: si autem vim tantum ibi posuit possibilitatis, ut homo fieret quoque modo fieret, ut et sic et sic posset, id est ut id quoque ibi esset quia et sic et sic posset; unum autem ipsum modum quo erat facturus in sua voluntate servavit, non mundi constitutioni contexuit: manifestum est etiam sic non factum esse hominem contra quam erat in illa prima conditione causarum; quia ibi erat etiam sic fieri posse, quamvis non ibi erat ita fieri necesse esse: hoc enim non erat in conditione creaturae, sed in placito Creatoris, cujus voluntas rerum necessitas est."*[86] Augustine then plainly admits two possibilities in regard to the appearance of the first human body. It may have been the necessary response to forces placed in the *rationes seminales* at the beginning, or it may have been the object of God's will manifesting itself externally only at the moment of its actual appearance.

We may ask then whether Augustine makes a distinction between the development of the lower forms of life from their *rationes seminales* into formal existence and that of the body of man. Our answer is in the affirmative in so far as he admits that the body of man may have been the result of a direct intervention on the part of God. He does not say positively that it was so, but he admits it as possible. Does he mean then that the *rationes seminales* were purely passive? Here we must make a distinction. There were present in the slime of the earth the ordinary active and passive powers to produce results natural to it and there was in addition to them in that particular slime destined to become the body of man the passive power to receive this human form, but it did not have the active power to

[86] *De Gen. ad Lit.*, Lib. VI, c. XV.

produce this result. The active cause of that was in God alone. The rod of Aaron possessed the active and passive qualities peculiar to it as a rod, but there was not in it the active cause to make it bloom and bear fruit. This cause was likewise hidden in God though the possibility of receiving that effect was in the rod. Therefore in the possibility that God did directly intervene, the *rationes causales* were only passive in as far as man was concerned, but in as far as they refer to the slime they were both active and passive. Augustine himself shows clearly that this was his meaning by the example he gives of Ezechias (*Isaias*, XXXVIII, 5). According to the ordinary causes, the time came for Ezechias to die, but in answer to his prayer the Lord prolonged his life for five years. The causes for this prolongation of his life were hidden in God. *"Secundum aliquas igitur causas inferiores,"* writes Augustine, *"jam vitam finierat: secundum illas autem quae sunt in voluntate et praescientia Dei, qui ex aeternitate noverat quid illo tempore facturus erat, tunc erat finiturus vitam quando finivit vitam."*[87] The *"causae inferiores"* were the natural active and passive powers or *rationes seminales* existing in the body of the prophet. According to them he was to die, but God had within Himself higher powers according to which Ezechias was to live five years longer. So, too, He had in Himself causes to produce other effects from the slime of the earth than those possible to its own natural powers.

This does not imply a change in the will of God for in those things out of which He desired to produce extraordinary effects He put only the possibility of producing their ordinary effects but not the necessity of doing so. This Augustine brings out clearly in what he says further about the body of Adam: *"Quapropter, si omnium futurorum causae mundo sunt insitae, cum ille factus est dies quando Deus creavit omnia simul; non aliter Adam factus est, cum de limo formatus est, sicut est credibilius jam perfectae virilitatis, quam erat in illis causis, ubi Deus hominem in sex dierum operibus fecit. Ibi enim erat non solum ut ita fieri posset, verum etiam ut ita eum fieri necesse esset. . . .*

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[87] l. c., Lib. VI, c. XVII.

Si autem non omnes causas in creatura primitus condita praefixit, sed aliquas in sua voluntate servavit; non sunt quidem illae quas in sua voluntate servavit, existarum quas creavit necessitate pendentes: non tamen possunt esse contrariae quas in sua voluntate servavit, illis quas sua voluntate instituit."[88] The two "if" clauses indicate the two possibilities, that God put the causes of Adam's body in the elements at the beginning or that he retained them within himself. In either case there was no inconsistency in the divine will. He adds in his own pithy way: *"Istas ergo sic condidit, ut ex illis esse illud, cujus causae sunt, possit; sed non necesse sit: illas autem sic abscondit, ut ex eis esse necesse sit hoc, quod ex istis fecit ut esse possit."*[89]

In the case of the body of Eve, he also states the possibility of direct intervention as conditional. Nevertheless he seems to be much more inclined towards this alternative than the other of normal natural development. *"Quod si quaeritur,"* he writes, *"quomodo se habeat causalis illa conditio, in qua primum hominem Deus fecit ad imaginem ac similitudinem suam (ibi quippe et hoc dictum est, 'Masculum et feminam fecit eos,' Gen.* 1, 27) *utrum jam illa ratio, quam mundi primis operibus concreavit, atque concrevit Deus, id habebat, ut secundum eam jam necesse esset ex viri latere feminam fieri; an hoc tantum habebat ut fieri posset, ut autem ita fieri necesse esset, non ibi jam conditum, sed in Deo erat absconditum: si hoc ergo quaeritur, dicam quid mihi videatur sine affirmandi temeritate; quod tamen cum dixero, fortasse prudenter ista considerantes, quos jam christiana fides imbuit, etiam si nunc primitus ista cognoscunt, non esse dubitandum judicabunt."*[90] Then he goes on to explain more fully what he means by normal natural development and that extraordinary development due to causes hidden in God. This has already been pointed out and only his concluding sentence will be given here: *"Habet ergo Deus in seipso absconditas quorumdam factorum causas, quas rebus conditis non inseruit; easque implet non illo opere providentiae, quo naturas substituit ut sint, sed illo quo eas administrat ut voluerit, quas ut voluit con-*

[88] l. c., Lib. VI, c. XVIII.
[89] Ibid.
[90] l. c., Lib. IX, c. XVII.

didit."[91] These are the causes which produce the body of the first woman from the side of the first man. They reach their fulfillment not by that administration by which God supports what is in nature, but by that which is the immediate result of His own will. He had placed in nature from the beginning the possibility of receiving the form of the body of Eve, but the determining cause of that body remained hidden in Himself. *"Non habuit hoc prima rerum conditio, quando sexto die dictum est, 'Masculum et feminam fecit eos' ut femina omnino sic fieret; sed tantum hoc habuit, quia et sic fieri posset, ne contra causas quas voluntate instituit, mutabili voluntate aliquid fieret. Quid autem fieret, ut omnino aliud futurum non esset, absconditum erat in Deo, qui universa creavit."*[92] I think the evidence presented is sufficient to show that Augustine included the bodies of the first man and the first woman in the simultaneous creation of all things at the beginning of time. However, he considers it probable that unlike the lower forms of life, the potentiality of their bodies was purely passive in that there was not in the forces of nature the power to produce these bodies, such power being retained in God. There was, however, in the elements the possibility of receiving these forms through the intervention of the divine cause.

In view of what has been said, it is hardly necessary to add here that there is nothing in Augustine's account of the formation of man that could be interpreted as a belief that man's body preexisted in the form of a lower animal or that it developed through intermediate stages. He is interpreting the Scriptures and he accepts literally the statement that man's body was made out of the slime of the earth. Nor is the question as to when man appeared on earth answered directly by Augustine. He says simply that man was made *"suo tempore,"* in his own time. Still he implies that man was the last of the various classes of beings to come forth. This is based on two facts: first, that in the order of creation as contained in the narration of the six days, man is the last to be mentioned; and

[91] l. c., Lib. IX, c. XVIII.
[92] l. c., Lib. IX, c. XVIII.

secondly, that his actual appearance took place in Paradise wherein all kinds of living things already existed.[93]

The interpretation given above of Augustine's theory regarding the appearance of man's body fits in with the interpretation given by St. Thomas. In the *De Potentia* and in the *Summa* he says clearly that the *rationes causales* of the human body were passive and that the active power of the Creator was required to produce the body of man. "*Unde animam primi hominis, quam inquirendo et non asserendo dicit simul creatam cum Angelis in actu, non ponit factam ante sextum diem, licet in ipso sexto die ponat factam animam primi hominis in actu, et corpus ejus secundum causales rationes: quia Deus impressit virtutem passivam terrae, ut per potentiam activam Creatoris posset ex ea corpus hominis formari. Et sic anima in actu et corpus in potentia passiva in ordine ad potentiam activam Dei sunt facta.*"[94] Again in the *Summa*, he explains that a thing may exist according to the causal reasons in two ways: "*Uno modo, secundum potentiam activam et passivam: ut non solum ex materia praeexistenti fieri possit, sed etiam ut aliqua praeexistens creatura hoc facere possit. Alio modo, secundum potentiam passivam tantum; ut scilicet de materia praeexistenti fieri possit a Deo. Et hoc modo, secundum Augustinum, corpus hominis praeextitit in operibus productis secundum causales rationes.*"[95] In as much as he states elsewhere that the *rationes causales* are both active and passive, I think we may conclude that here St. Thomas does not mean that these causal reasons of the human body were absolutely passive but only so in regard to this particular form. There were active and passive powers in the slime of the earth but none capable of producing the body of man. They were able to receive it but the divine assistance was required to bring it into existence. Thomas does not consider the possibility, mentioned by Augustine, that the cause of Adam's body may have been placed in the elements.

Northcote, convinced that Augustine made no distinction between the *rationes causales* of man and those of lower

[93] l. c., Lib. IX, c. XII.
[94] *De Pot.*, q. IV, art. 2, ad 22um.
[95] *Summa*, I, q. XCI, art. 2, ad 4um.

animals, is much perplexed by the interpretation of St. Thomas. "It seems to us," he writes, "that St. Thomas has incorporated the notions of the Bishop of Hippo into his theology, not without some misgivings; he appears rather inclined to explain away than to fully endorse the opinions of the great light of the African Church."[96] He suggests that Thomas feared that if we admitted active powers in the *rationes causales* of man, we might conclude that created agents could produce the body of man as the magicians did frogs. Therefore, he says: "In his anxiety to preclude this possibility without altogether impugning the doctrine of the greatest of the Fathers, he (St. Thomas) sees no other way of obviating the difficulty than by reducing in this instance St. Augustine's vital energies—*seminales rationes* —to passive powers pure and simple."[97] He then states his own opinion thus: "Now that we have seen human bodies, it would be a truism too obvious to be worthy of notice from such a man as St. Augustine that matter is passively capable of receiving the human form, and if I quote a few extracts from his writings, I think it will be abundantly clear that his meaning was that the Creator implanted in matter active energies capable of evolving a body fitted to receive the immaterial form of the human soul as its actuating principle."[98] He then gives several quotations from the *De Trinitate* and the *De Genesi ad Litteram,* all of which we have used to prove that the *rationes seminales* included active powers but he seems to have overlooked those passages in which Augustine evidently makes a possible exception of the human body.

Other modern authors have held likewise that Augustine made no distinction between the origin of man and of other lower animals. Father Woods asserts: "He (Augustine) says distinctly that Adam's body was not created differently from those of other creatures; that Adam was created according to his seminal reasons."[99] Since Woods maintains that all causal reasons were purely passive, he could not logically make an exception for man's body. Dorlodot goes

[96] Northcote: *The Idea of Development,* p. 23.
[97] l. c., p. 27.
[98] l. c., p. 28.
[99] Woods: *Augustine and Evolution,* p. 75.

far in the opposite extreme. Not only does he say that, according to Augustine, man's body, like all other living beings, has evolved by a natural evolution of inorganic matter,[100] but he implies that the body was prepared by a gradual process through intermediate stages. In a footnote explaining a statement that the appearance of the first man did not require a special intervention on the part of God, he writes: "As to the soul of the first man, St. Augustine, faithful to his principle concerning God's repose, holds also that it was created at the first instant of time. Later on, when the body had reached by natural evolution a suitable state of organization, the soul united itself to the body by a kind of natural inclination."[101] Concerning the soul, Dorlodot's statement needs to be qualified. Augustine suggests this theory and holds that it is *"tolerabilius"* but no more.[102] As for the body, there is certainly no authority for the statement that it evolved until it had reached "a suitable state of organization." I think that Augustine's belief that the human body passed directly from its potential condition in the *rationes seminales* to its actual form is beyond question. Moreover, I hold as equally certain that he admitted the possibility of intervention on the part of the Creator in the formation of man. This does not involve a new creative act, since God made use of existing matter, the slime of the earth. Neither does it mean that there was any intrinsic impossibility preventing God from putting the active cause of man's body in matter. Augustine for various reasons held it probable that He did not, but instead retained this cause within Himself. It is a question of exegesis and Augustine thought that this interpretation of the formation of man fitted in better with the scriptural story than any other. In regard to the production of the body of Eve from the side of Adam, direct divine intervention is the only explanation which he gives.

This brings to a conclusion our study of the origin and development of the *rationes seminales.* Summing up the results briefly, we may say that Augustine held firmly to

[100] Dorlodot: *Darwinism and Catholic Thought,* p. 142.

[101] l. c., p. 143.

[102] *De Gen. ad Lit.,* Lib VII, c. XXIV. Cfr. also O'Connor: *The Concept of the Soul according to St. Augustine,* p. 70.

the theory of the creation of all things. The act of creation did not extend over a period of time but occurred in a mathematical moment. At that moment, all things came into existence: some in their proper forms, other only potentially. Included in the former were the four elements: earth, air, fire and water; and in the latter were all living things that were to appear in the course of time. Time itself began at the moment of creation, for all creatures. God made nothing new in time, but by His administration supported and directed the things He had created. Under this administration, those beings created potentially developed into their proper forms, ordinarily, according to the laws and powers put into matter at the beginning. In extraordinary cases, God retained within Himself the causes to produce effects beyond the ordinary forces of nature or at least beyond the ordinary processes of nature. Such results are miracles. The development of the first plants and animals occurred in the ordinary way. Augustine does not tell us in what order things appear but he does imply that they passed from their *rationes seminales* directly to their own proper forms and that those forms are the same as those that existed in his own day. Thus he excludes transformism. Man's body was created potentially like other beings, at the beginning, but the power to bring it to actuality may have been retained in God. The great Doctor thus allows the possibility of direct divine intervention in the formation of the first man. That man was the last of all the creatures to appear upon the earth is implied but there is no room for the theory that the body was prepared by a series of transformations through intermediate stages.

CHAPTER V

ST. AUGUSTINE AND EVOLUTION

It might seem, in view of what has already been decided concerning Augustine's cosmological theories, that the question of his stand on evolution has already been answered. If Augustine believed that the first individuals of each species developed immediately from the *rationes seminales* and remained constant through succeeding generations, how can we even consider the possibility of him being an evolutionist? There is, I think, one consideration which warrants further discussion of this question. That Augustine did not explicitly teach evolution, we may accept as certain. But is it possible to find in his doctrine any support whatsoever for the theory of evolution? If Augustine had known the scientific facts available to us today, would he have favored the hypothesis of transformism?

The conflicting opinions held by modern writers on this subject seem to the writer additional justification for writing this chapter. From the statement of Dorlodot, that the theory of absolute natural evolution was formally professed by St. Augustine[1] to that of Father Woods that: "St. Augustine's doctrine so understood has nothing that in any way favors evolution,"[2] there is a wide range. It has become customary for modern defenders of the theory of evolution, Catholic and non-Catholic, to appeal to the authority of St. Augustine to justify their claims. On the other hand the opponents of the theory, from Burton to O'Toole, have emphatically denied that there is in Augustine any hint of evolution. Between these two extremes, I think, lies the truth.

1. Modern Evolutionism

In a discussion of this kind, it is of the utmost importance that we have a clear understanding of the meaning

[1] Dorlodot: *Darwinism and Catholic Thought*, p. 87.
[2] Henry Woods, S.J.: *Augustine and Evolution*, p. 4.

of the terms used. It is doubtful if any word is more frequently found in scientific and popular discussion, in the last half century, than evolution. In the popular mind it means almost anything from man's descent from the monkey to the development of dogma. Consequently we must first decide what is meant by the theory of evolution.

Evolution, in a general sense, means a development, a series of successive changes by which a thing passes from one state to another state, under internal or external influences, or both. In a more technical sense, it is the theory that the world has reached its present condition only after passing through a number of intermediate stages. As applied to non-living matter, it is called inorganic evolution. According to this theory, the world did not come into existence as it is today but in a much simpler state and gradually developed to its present form. It is not necessary to give here the different theories proposed to explain the process by which this came about, since they do not concern our present study. Organic evolution, on the other hand, has to do with life. Parker, a celebrated defender of the theory, defines it thus: "The belief that plants and animals of particular kinds have descended by gradual modification from preexisting plants and animals of very different kinds."[3] It is in this sense that the term is most commonly used today. Two things are to be noted: the hypothesis does not pretend to explain the origin of life; nor does it seek to determine definitely the number of the original forms of life. O'Toole, an opponent of evolutionism, accepts a similar definition. According to him, "Evolution, or transformism, as it is more properly called, may be defined as the theory which regards the present species of plants and animals as modified descendants of earlier forms of life."[4] It is true that there are evolutionists who have expressed very decided views regarding the origin of life and its original form or forms, but the more scientific attitude tends to avoid these issues since there is no experimental evidence on which to base an opinion.

The theories proposed to explain the origin as well as

[3] Parker: *What Evolution Is*, p. 6.
[4] O'Toole: *The Case Against Evolution*, p. 3.

the development of creatures may be included under the names of Materialistic Evolution and Theistic Evolution. According to the latter system, God created the world and its original forms and gave to them power to develop into the forms existing today. This has been subdivided into what Dorlodot calls Absolute Natural Evolution and Moderate Evolution. The former "attributes the first origin of living beings to a natural evolution of inorganic matter, which became organized and ultimately living matter by the simple action of forces, or better still, of powers inherent in it in days gone by."[5] This of course involves the theory of the spontaneous generation of living things from inorganic matter. Moderate Evolution postulates at least one intervention by the creator to account for the origin of life, or possibly several interventions for the different forms of life. Absolute Evolution denies the necessity of any intervention. As far as the power of God is concerned it is agreed that either method would be equally possible to Him. Materialistic Evolution denies the theory of creation and even the existence of a creator and seeks refuge either in the eternity of matter or in hopeless ignorance.

It is evident that a Catholic is free to hold Theistic Evolution if the evidence seems to him sufficient. If we give the Creator His proper place in the origin and support of all things there is nothing in the prescribed teaching of the Church forbidding us to hold the theory of organic evolution. Therefore when we discuss the question of St. Augustine and Evolution, there is no reflection whatsoever on his loyalty to the Church and her doctrines. The principles enunciated by the great Father of the Church regarding the interpretation of the Scriptures were used by Pope Leo XIII in his encyclical, *"Providentissimus Deus,"* in which he lays down the rules scholars are to observe in their interpretation and defense of the Sacred Word.[6] We are safe then in following Augustine and if his words have an evolutionary meaning, we may accept them as such without in any way detracting from his honorable position in the Church.

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[5] Dorlodot: *Darwinism and Catholic Thought*, p. 4.

[6] Cfr. Dorlodot, l. c., p. 7, where the author discusses thoroughly the Catholic principles of interpretation.

2. Comparison With Augustine's Theory

But what support for the theory of evolution can we find in Augustine? All authorities agree that he did not hold or profess a belief in inorganic evolution. His assertions that the inanimate world came into being in the form that we see today are so definite and clear as to remove all possibility of disagreement regarding their meaning. However, I believe that Dorlodot's statement that Augustine formally professed Absolute Natural Evolution is open to serious criticism. It is true that Augustine did not postulate a divine intervention for the origin of life. Spontaneous generation was accepted as a scientific fact by all the learned men of his day. It was not contrary to the Scriptures nor impossible with God and consequently Augustine accepted it without question. Nevertheless, the learned doctor did admit of a divine intervention in the origin of the human body. He considered its origin through natural causes possible but the special account of the creation of man in the Scriptures led him to suggest, as we have seen,[7] that God retained within himself the active cause of the human body and exercised this directly, by His will, upon the passive slime of the earth. In regard to the body of the first woman, he accepts the account of its origin from the side of Adam and admits divine intervention as the only satisfactory explanation.

Leaving aside, then, the question of man's origin, and confining ourselves to transformism in plants and animals, can we find any foundation for this hypothesis in Augustine's system? The Bishop's purpose in treating this whole subject was to give an acceptable interpretation of the creation account in *Genesis*. That there is actually no transformism in it, has already been stated. But is this to be traced to the Scriptures or to the current theories of his time? If it can be shown that his opinion was based on an erroneous scientific belief and that with this one point corrected, the theory of transformism would furnish a better explanation for his scriptural interpretation, then I think there is reason for alleging his authority in confirmation of

[7] P. 87.

the theory. Briefly, Augustine's explanation of creation is this: all things were created simultaneously in a mathematical instant and the six days represent this instant so presented as to show a causal connection between the objects of creation but not a lapse of time. At the moment of creation, the earth, sea, heavenly bodies, etc., existed as they are today, but the living things, only virtually or potentially, in the *rationes seminales.* After that God created nothing else, but under His administration the creatures, created potentially at the beginning, developed into their proper forms. This work of administration consisted in the support of things in existence, of their development according to the causes and laws placed in them from the beginning or according to causes retained in God and manifested externally only at the appointed time. The first is the ordinary way; the second, the extraordinary or miraculous way. The living beings that were later to appear on the earth were determined specifically from the beginning and were to develop according to natural law in the ordinary way.

All this Augustine clearly deduced from the revealed word. It must be admitted that it sounds evolutionary. The world at the beginning contained physical forces which were in the course of time to bring forth according to natural laws all things which were destined to appear upon the earth. But, says Augustine, these things were to develop, each immediately into its own form and then reproduce itself constantly in that form. This anti-evolutionary opinion is, I am convinced, based not on the Scriptures but on the current theory of spontaneous generation.[8] If the biogenetic principle, *omne vivum e vivo,* were known to Augustine, he would never have adopted this opinion. This conviction is based on his own principles. At the very beginning of his work on the book of *Genesis,* he warns his readers of the danger of presenting interpretations which

[8] Al. Janssens (Scheut) in an article, "*De Rationibus Seminalibus,*" which appeared in the *Ephemerides Theologicae Lovanienses* (Jan. 1926), states that Augustine did not derive life from matter, but from the causal reasons, placed by God in matter, and consequently that he did not in reality hold the theory of spontaneous generation. However, these causal reasons were non-living physical forces and life developing from them would be in reality abiogenesis, or spontaneous generation.

are so contrary to fact that they make scientists ridicule the sacred text, and thus cause them to turn away from this means of salvation. These are his words: *"Plerumque enim accidit ut aliquid de terra, de coelo, de caeteris mundi hujus elementis, de motu et conversione vel etiam magnitudine et intervallis siderum, de certis defectibus solis ac lunae, de circuitibus annorum et temporum, de naturis animalium, fruticum, lapidum, atque hujusmodi caeteris, etiam non christianus ita noverit, ut certissima ratione vel experientia teneat. Turpe est autem nimis et perniciosum ac maxime cavendum, ut christianum de his rebus quasi secundum christianas Litteras loquentem, ita delirare quilibet infidelis audiat, ut, quemadmodum dicitur, toto coelo errare conspiciens, risum tenere vix possit. Et non tam molestum est, quod errans homo deridetur, sed quod auctores nostri ab eis qui foris sunt, talia sensisse creduntur, et cum magno eorum exito de quorum salute satagimus, tanquam indocti reprehenduntur atque respuuntur."*[9] Any person today professing the theory that the first individuals of each species that now exists sprang from inanimate matter by natural law, would certainly bring upon himself the ridicule of all learned men and no interpreter of Scripture would say that this is a necessary deduction of revealed truth. Certainly Augustine would have been the first to condemn such an opinion.

The second principle on which we based the conviction that Augustine would today reject the opinion that the first individuals of each species rose immediately from the elements of the earth, is that we are not to look for miracles in the natural development of living things. In giving his explanation of the divine administration, it was pointed out that things were to develop according to God's ordinary manner of administration which is to support things as they are and not to introduce new causes or methods of activity. *"—illo opere providentiae, quo naturas substituit ut sint."*[10] Sometimes for special reasons God does intervene, but this is not according to nature. In the origin of things he says we must look for the natural not the miracu-

[9] *De Gen. ad Lit.*, Lib. I, c. XIX.
[10] l. c., Lib. IX, c. XVIII.

lous. *"Nunc enim quemadmodum Deus instituerit naturas rerum, secundum Scripturas ejus nos convenit quaerere; non quid in eis vel ex eis ad miraculum potentiae suae velit operari."*[11] St. Thomas, commenting on this passage, writes: *"In prima autem institutione naturae non quaeritur miraculum, sed quid natura rerum habeat, ut August. dicit* (Lib. II, sup. *Gen. ad Lit.*, cap. 1)."[12] He repeats this statement in his commentary on the *Sentences.*[13] With this principle there can be no doubt that Augustine woud not have so explained the appearance of plants and animals, that a direct intervention of God would be required for each species. Since the biogenetic principle has been established, we know that this would be the case in the plan of the separate development of each species.

The theory of transformism, on the other hand, would give to the great doctor an explanation of the appearance of things, consistent with his interpretation of *Genesis* and with the facts of science. Accepting the fact of creation as described by Augustine, we have the world filled with the causes of things to come. Their coming is to be effected by natural law. Since life comes naturally only from life, we must postulate a divine intervention for the first living form or more probably forms, since some things were to come from land and other from water. By the gradual development and differentiation of these original forms of life, the *rationes seminales* hidden in nature from the beginning would in the course of time assume their proper forms. That these forms were predetermined from the beginning means only that the differentiation would proceed along definite lines and not depend upon chance. The scriptural authority which Augustine found for the fixity of species in the repetition of the words "according to their kinds" could easily be invoked in another way. The brave Bishop who dared to go contrary to the opinions of his fellow theologians in his day would not hesitate to do so today. The great designs of God existing in His mind from all eternity placed by Him in the world at the beginning would gradually find their realization under His natural providence.

[11] l. c., Lib. II, c. 1.
[12] *Sum.* 1, q. LXVII, a. 4, ad 3um.
[13] *In II Sent.* Dist. XIII, q. 1, a. 4.

Thus would be really fulfilled the conception of Augustine to which Wasmann refers when he says: "Even to St. Augustine it seemed a more exalted conception, and one more in keeping with the omnipotence and wisdom of an infinite Creator, to believe that God created matter by one act of creation, and then allowed the whole universe to develop automatically by means of the laws which He imposed upon the nature of matter.[14]

That Augustine believed that the *rationes seminales* of one being might be contained in the body of another is evident from the explanation which he gives of the origin of living things from the decaying bodies of dead animals. He says this cannot be accounted for *"nisi quia inerat jam omnibus animatis corporibus vis quaedam naturalis, et quasi praeseminata, et quodammodo liciata primordia futurorum animalium, quae de corruptionibus talium corporum pro suo quaeque genere ac differentiis erant exoritura, per administrationem ineffabilem omnia movente incommutabili Creatore."*[15] We know now that the *vis quaedam naturalis* could not be the cause of future animals unless it itself were living, but there seems to be no reason why the *promordia futurorum animalium* might not develop through an increasing differentiation in the succeeding generations of the living form. There can be no objection from the principle of causality. As Dorlodot points out, "this requires that the perfection of the effect should be contained in the totality of its causes. But experience proves that the perfection of the effect is never contained adequately in the perfection of its created causes. If, then, the created cause is able to act, it is not as the sufficient cause, but as an instrument of the Creator."[16] Bearing in mind the distinction which Cajetan makes between permanent and temporary instruments, and considering the *rationes seminales* as permanent instruments of the Creator, then the cause of any natural differentiation or mutation is sufficiently accounted for.

Father Thomas J. Livingstone, S.J., in an article in the *Ecclesiastical Review*,[17] implies that the Fathers were

[14] Wasmann: *Modern Biology*, p. 274.
[15] *De Gen. ad Lit.*, Lib. III, c. XIV.
[16] Dorlodot: *Darwinism and Catholic Thought*, p. 118.
[17] Amer. Ecc. Rev., vol. 73, p. 374 (October, 1925.)

familiar with the theory of transformism and deliberately rejected it because it was contrary to experience, to Aristotle, and to the Scriptures. First, he says that the Fathers must have had a knowledge of evolution to combat certain errors, and this knowledge they obtained from Aristotle. Then he adds: "Besides this knowledge of evolution in general, which we infer the Fathers must have had, it can be shown from their own words that they knew also of the theory of the transmutation of Species."[18] Disregarding the knowledge which they must have had, and also the arguments from the other Fathers, I will consider only those which he derives from St. Augustine. Four quotations are offered. The first of these deals with the possibility of the elements being changed into each other.[19] Here the Bishop proposes the question but does not answer it. The second reads: "There are not wanting those who assert that all bodies can be changed into all others."[20] The third is to the effect that this second statement is *credible,* but adds that the opinion "that any body whatsoever can be converted into a soul is absurd."[21] The fourth is an argument against the materiality of the soul. Now, none of these statements embody the idea of transformism or the transmutation of species as they are understood today. The assertion that any body can be changed into any other body is a reference to the Manichaen doctrine of the transmigration of souls. The question of the change of a material body into a spiritual soul is not a problem of transformism. Those who include man in the evolutionary process do not admit the existence of a spiritual soul, while those who admit the spiritual element in man's nature may make the body an object of evolutionary progress, but they do not include the soul. In none of these quotations is there any reference whatever to the development of plants or animals, and I think we can safely say that the idea of transformism, in our modern sense, never entered into the mind of St. Augustine and I might add that this holds true for St. Thomas and Suarez as well. Probably Father

[18] Ibid.
[19] *De Gen. ad Lit.,* Lib. III, c. III.
[20] l. c., Lib. VII, c. XII.
[21] l. c., Lib. VII, c. XX.

Livingstone did not mean to say that transformism, as we understand it, was familiar to the Fathers; still, the ordinary reader will get that impression from his words. Likewise his inference that the Fathers deliberately rejected this theory is misleading.

The Abbe Martin, in his scholarly work on St. Augustine,[22] and Portalie in his article on Augustine, in the *Dictionnaire de Theologie Catholique*,[23] both assert that Augustine declared transformism to be impossible and they base their assertions on the text in which he says that the elements of this world have definite powers, determining what they can do and cannot do, and concludes by writing: "*Unde fit ut de grano tritici non nascatur faba, vel de faba triticum, vel de pecore homo, vel de homine pecus.*"[24] Boyer has a comment on these opinions of Martin and Portalie, in which he holds that Augustine was not referring to transformism when he wrote this sentence and confirms our opinion that this theory never entered Augustine's mind. He writes: "L'Abbé J. Martin et le P. Portalié écrivent que St. Augustin a déclaré impossible le transformation des espèces. Mais le texte qu'ils allèguent celui de la note precédénte (de grano tritici non nascitur faba) ne semble pas avoir une telle prétention. Saint Augustin n'envisageait pas les conditions sous lesquelles est présentée la doctrine transformiste. Dans les limites de l'expérience ordinaire, il est admis per tous, aujourd'hui encore, qu'une fève ne sort pas d'un grain de blé. Il nous parâit plus juste de dire que le docteur d'Hippone n'a pas songé au transformisme, mais que son système fournirait au transformisme, le cas échéant, une expression philosophique rationnelle. Ce dernier point est d'ailleurs noté par l'abbé Martin, ibid., p. 314."[25] I think we must agree with the statement of Boyer that though St. Augustine does not take transformism into consideration, nevertheless his system furnishes for this theory "une expression philosophique rationnelle." In the body of his text he has another state-

[22] L'Abbe Jules Martin: *St. Augustin*, p. 314.

[23] Le P. Portalie: art. *Augustin*, du Dict. de Theol. Cathol. Col. 2353.

[24] *De Gen. ad Lit.*, Lib. IX, c. XVII.

[25] Boyer: *L'Idée de Vérité*, p. 132.

ment to the same effect: "L'hypothèse transformiste ne pouvait se présenter à l'esprit d'Augustin: mais on voit que, fut-elle vérifée, cette hypothèse ne troublerait en rien son système."[26]

In the quotation above (n. 25) Boyer adverts to the fact that Abbé Martin agrees with him that the system of Augustine would furnish an explanation for transformism. Since this point is important, I think it worth while to give the words of the Abbe. He says: "Et cepandant si un jour l'évolution était chose bien constatée, l'enseignement de saint Augustin s'en accomoderait à merveille; alors, en effet, il y aurait à dire que l'acte créateur toujours actuel produit précisément la transformation des espèces. Or, parlant ainsi de l'acte créateur, on exprime ce qui aux yeux de saint Augustin est la doctrine fondamentale toujours nécessaire. Mais tout le reste ce n'est que l'histoire du monde extérieur; ce n'est que l'expression superficielle du fait."[27] Although he asserts that Augustine denied the possibility of transformism, nevertheless he too realizes how wonderfully the doctor's system might be adapted to it. What he says about the creative act producing the transformation of species might easily be referred to the divine administration as explained above. His distinction between the fundamental doctrine of creation and its external expression fits in well with what has been said about the scriptural interpretation and its scientific explanation. Thamiry also holds that there is in the doctrine of the *rationes seminales* a basis for the theory of evolution. In speaking of the nature of the *rationes seminales* as explained by St. Augustine, he says: *"Uno verbo, rationes seminales non transformismum quidem, sed in theoria descendentiae secundum quid evolutionem possibilen simul ac limitatam nobis demonstrant."*[28]

One of the earliest of the modern writers to call attention to the possibility of harmonizing the doctrine of Augustine with the theory of evolution was St. George Mivart. In his book, *"On the Genesis of Species,"* published in 1871, he says: "Now, St. Augustine insists in a

[26] Ibid.
[27] L'Abbe Jules Martin: *St. Augustin*, p. 314.
[28] Thamiry: *De Rationibus Seminalibus*, p. 109.

very remarkable manner on the merely derivative sense in which God's creation of organic forms is to be understood; that is, that God created them by conferring on the material world the power to evolve them under suitable conditions."[29] And again: "It is then evident that ancient and most venerable theological authorities distinctly assert derivative creation, and thus harmonize with all that modern science can possibly require."[30] Father J. A. Zahm, C.S.C., writing at a slightly later period, emphasizes the fact that Augustine lays stress on the operation of natural laws. "The most remarkable feature," he says, "of St. Augustine's system of exegesis . . . is the special stress he lays on the operation of natural laws, and the observations he makes concerning derivative creation or creation through the agency of secondary causes.[31] . . . He insists on it that we should explain the phenomena of the physical world in conformity with the nature of things—*naturas rerum*—and not by the constant intervention of miracles, and emphasizes the fact that the Almighty has 'ordained all things in measure and number and weight.' "[32] Although he calls Augustine the "father of theistic evolution," still he insists that the saint knew nothing of modern evolution. "It may seem strange to some of my readers to be told that St. Augustine was the father of theistic evolution, and yet, paradoxical as it may appear, the statement is substantially true. Of course it is quite evident that he knew nothing about evolution as it is now taught.[33] . . . The Fathers and Doctors of the Church were fully abreast with the science of their time, and it were folly to expect more than this of them . . . to exact of them a knowledge which those who made the pursuit of science a specialty did not possess, or to imagine that they should be as far advanced in the inductive sciences as those who have had the benefit of long centuries of observation and experiment."[34] When Doctor Zahm, who is evidently amplifying the thought of Mivart, attributes to Augustine the doctrine of derivative

[29] Mivart: *The Genesis of Species*, p. 281.
[30] L. c., p. 283.
[31] Zahm: *Bible, Science and Faith*, p. 78.
[32] l. c., p. 80.
[33] l. c., p. 18.
[34] l. c., p. 87.

creation, he does not mean thereby transformism but, as he says himself, "creation through the agency of secondary causes." Augustine's claim to the title "Father of Evolution" is based on the principles of exegesis which he defined and on his interpretation of *Genesis* which can be accommodated as well to the scientific theories of today as to those of the fifth century.

Attention must be called here to the most remarkable agreement between the system of St. Augustine and a theory proposed a few years ago by one of the foremost scientists of our day, Dr. Wm. Bateson. In a report on Heredity, read at the Australia meeting of the British Association for the Advancement of Science, he suggests that evolution may be not an accumulation of additional factors, but an unfolding of possibilities contained within the original forms in nature. The following is an extract from this report: "Having in view these and other considerations which might be developed, I feel no reasonable doubt that, though we may have to forego a claim to variations by addition of factors, yet variation both by loss of factors and by fractionation of factors is a genuine phenomenon of contemporary nature. If, then, we have to dispense, as seems likely, with any addition from without we must begin seriously to consider whether the course of evolution can at all reasonably be represented as an unpacking of an original complex which contained within itself the whole range of diversity which living things present. . . . At first it may seem rank absurdity to suppose that the primordial form or forms of protoplasm could have contained complexity enough to produce the diverse types of life. But is it easier to imagine that these powers could have been conveyed by extrinsic conditions?"[35] Commenting on this theory and its relation to Augustine, Father Husslein says: "It is very interesting to note in this connection how the Batesonian theory, described as mendelism to the nth power, recalls the Augustinian view, surprised as its author may be to hear this mentioned. Every new evolution, according to him, was contained in the original organism. Variations are merely the result of

[35] Annual Report of the Smithsonian Institution, 1915, p. 372.

removing something that prevented certain hidden characteristics from freely manifesting themselves."[36] The development of the science of Genetics has turned the attention of scholars from the external to the internal factors of development. With this is coming a realization that evolution may be an "unpacking of an original complex" or, as Augustine expressed it: *"explicando mensuras et numeros et pondera sua quae in occulto acceperunt ab illo, qui omnia in mensura et numero et pondere disposuit* (*Sap.* XI, 21)."[37] Fifteen hundred years have elapsed since the keen mind of Augustine elaborated his system and what a tribute it is to him that in this twentieth century a scientist should propose as something new and daring a theory similar to his own.

3. Conclusion

It is not my intention to prove that the cosmological system of St. Augustine is true to reality; neither do I accept the theory of transformism as an established scientific principle. My aim has been to show what the great doctor really taught and then to determine in how far it favors a doctrine of evolution. In the former two things stand out: 1. God created all things at the beginning, the elements and heavenly bodies in their proper forms, all living things potentially; 2. by His administration He supports these things in existence and enables the potential beings to become actual in time by the operation of the natural laws which He himself imposed upon them. Occasionally He intervenes and produces effects immediately but this is extraordinary and these effects are for that reason called miracles. His teaching that the first individual of each species developed immediately from its potential condition to its proper form and remained constant in that form through successive generations, precludes any possibility of attributing transformism to him directly. Nevertheless his doctrine of the gradual appearance of living beings upon the earth through the operation of natural laws and secondary causes, constitutes a satisfactory

[36] Husslein: *Evolution and Social Progress*, p. 100.
[37] *De Trinitate*, Lib. III, c. IX.

philosophical basis for evolution, and merits for him the title of Father of Evolution. As Sir Bertram Windle so well says: "To me, at least, it seems as if the language of Peter Lombard and of St. Thomas Aquinas, in commenting on St. Augustine, makes it clear that the teaching of the greatest and most influential Doctor in the history of the Church is quite consonant with any reasonable theory of evolution—nay, it is broad and comprehensive enough to provide not only for whatever limited degree of evolution is yet fairly established, but even for anything that has even a remote probability of being proven in the future. Nor am I deterred from coming to that conclusion by the very obvious criticism that the Saint did not state the doctrine with the clearness with which it is now laid down, a thing which no reasonable being would expect him to have done."[38]

St. Augustine, by his principles of exegesis and their application to the story of creation in *Genesis*, has laid a great debt upon all Christian scholars. He has shown the theologian the attitude he must take toward science; and the scientist how he must approach the truths of revelation. Truth cannot contradict truth and therefore the revelation in the Scriptures cannot contradict the revelation in nature, nor *vice versa*. The interpreter must not attribute to the revealed word, truths which are contrary to the demonstrated facts of science, and the scientist must not scoff because the true meaning underlying this revealed word may be hidden from him. The saint put his principles into practice by giving an interpretation of Genesis that is in harmony with the text and with natural facts. By his distinction between creation and divine administration and his explanation of the latter he has shown us how to reconcile the doctrine of God's constant support and direction with the reign of natural law and the operation of secondary causes. He has made it clear to us that direct intervention on the part of God is extraordinary but not inconsistent. By his theory of the *rationes seminales* we are given a philosophical explanation of the action and interaction of material bodies, the generation and growth of living

[38] Windle: *A Century of Scientific Thought*, p. 8.

beings. Evolution, so terrifying to many, becomes in his system a wonderful demonstration of God's wisdom and power. Ardent lover of God, he yearned for a knowledge of God and His creatures. *"Sed tu quomodo facis ea,"* he cries in his *Confessions, "quomodo fecisti, Deus, coelum et terram?"*[39] Animated by this intense love, he was rewarded by an insight into the nature of things far more perfect than any of his contemporaries. We have tried to look with his eyes at the vision which he saw and to reproduce it here. If we have erred, we ask his forgiveness; if we have seen correctly, we thank him for the truly wonderful picture which he has given us of the relation between God and His creatures.

[39] *Confessions,* Lib. XI, c. V.

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Michael John McKeough was born at Green Bay, Wisconsin, September 18, 1891. His elementary studies were pursued at St. John's Parochial School in his native city. He entered St. Norbert's College, West De Pere, Wisconsin, in 1907, where he followed the regular academic and college courses, receiving the B.A. degree in 1914. On August 28, 1912, he joined the Norbertine (Premonstratensian) Order. He was ordained to the priesthood in 1917 and from July 1918 to July 1919 he served as a Chaplain in the United States Army. In the Fall of 1919, he entered the Graduate School of the Catholic University of America, following courses in Philosophy of the Mind, Social and Genetic Psychology and the Philosophy of Evolution under the Rt. Rev. E. A. Pace, S.T.D., Ph.D., Industrial Ethics under the Rev. John A. Ryan, S.T.D., Introduction to St. Thomas and the Psychology of St. Thomas under the Very Rev. Ignatius H. Smith, O.P., Ph.D., the Philosophy of Education under the Very Rev. Thos. E. Shields, Ph.D., School Administration and Management under the Very Rev. P. J. McCormick, Ph.D., S.T.L., History of Philosophy under the Rev. J. J. Rolbiecki, Ph.D., Biology under Prof. John B. Parker, Ph.D. He received the degree of M.A. from the university in 1920. To all who assisted him in his work and especially to Monsignor E. A. Pace, under whose direction this dissertation was written, he wishes to express his sincere gratitude.

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